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FACULTY OF EDUCATION
The University of Alberta

ERRATUM

Janzen, H. L. and Boersma, F. J. Locus of Control and Its Relationship to Moral Development, Vol. XXII, No. 3, 1976, should read: Eby, J., Janzen, H. L. and Boersma, F. J. Drs. Janzen and Boersma sincerely regret and take responsibility for the oversight; they wish to apologize to Mr. Eby and the readership of the Journal for the false impression that the omission created. (Mr. Eby is a school teacher in Hamilton, Ontario.)

Editorship of AJER

The Publications Committee wishes to thank Dr. Thomas E. Kieren for his services as Editor of **AJER** over the past two years. Under his capable guidance, this journal continued to develop as an important publication in the field of education; Dr. Kieren will be away during the next year on a well-earned study leave.

We are pleased to welcome as the new editor Dr. Andrew K. Clark who is an Associate Professor in the Department of Industrial and Vocational Education. Dr. Clark holds the B.A. and B.Ed. degrees from the University of Alberta, the M.Ed. degree from the University of Manitoba, and the Ph.D. degree also from Alberta. In his doctoral studies, he specialized in educational research and measurement with additional work in computer programming, theory of data analysis, and philosophy of science.

Before coming to the University of Alberta in 1967, Dr. Clark served as a training officer in the Education Branch of the Royal Canadian Air Force. Since his appointment, he has been involved in teaching undergraduate and graduate courses, supervising field experiences and directing graduate research. His recent research has included studies of metric conversion costs in industrial education career fields and the readability of industrial education textbooks.

We look forward to Dr. Clark's term of office as editor and wish him well in his new responsibilities.

E. Miklos, Chairman
Faculty Publications Committee

A. MacKAY

The University of Alberta

The E.O.F. Evaluation Study: Some Tentative Generalizations

During 1975 an evaluation of the Alberta Educational Opportunities Fund was conducted. The EOF program had a number of characteristics which had implications for the evaluation design. These included: broadly stated goals, special "earmarked" funding, a requirement for written proposals, a requirement for an internal evaluation of each project, and considerable variation in school subject areas dealt with by the projects.

Several tentative generalizations emerged from the reactions to these characteristics. The generalizations were: (1) Principles of research design must be adapted to the exigencies of the situation. (2) Attempts should be made to obtain data which permit cross-checking so as to compensate for deficiencies in any single data source. (3) Questions about side-effects should be part of most evaluation designs. (4) A variety of research paradigms should be known by and used by evaluators. (Dr. MacKay is Chairman of the Department of Elementary Education, The University of Alberta.)

This paper is intended to do three things: (1) to identify some of the problems associated with evaluation of a province-wide program, (2) to describe how these problems were dealt with in the particular case under review, and (3) to suggest how evaluators and their clients might approach problems of a similar nature. The case in point was the evaluation of the *Alberta Educational Opportunities Fund* program. The program (hereafter referred to as E.O.F.) was introduced in 1973 and provided twenty dollars per pupil per year for approved projects aimed at pupils in Grades 1-6. Beside the elementary school component there was an E.O.F. (Compensatory) component which provided funds, on a project approval basis, for programs aimed at disadvantaged pupils at any grade level. The E.O.F. program was originally planned for the three-year period 1973-76 and the evaluation under discussion here was conducted towards the end of the second year of operation.

The terms of reference for the evaluation were embodied in eight general questions:

- (1) To what extent has the E.O.F. program achieved its intended objectives?
- (2) What by-products in terms of educational programs, innovations, etc., has the program produced?
- (3) How well have the individual E.O.F. projects in school districts realized their stated objectives?
- (4) What administrative, fiscal, or other effects have been produced at the school district level, by the introduction of the E.O.F. program?
- (5) How valuable is the funding of projects on the basis of proposals as compared with formula financing?
- (6) What are the specific changes in E.O.F. program policies and procedures which would improve the quality and long-term productivity of the project?
- (7) How well has E.O.F. (Compensatory) realized its stated objectives?
- (8) Needs assessment re secondary component of E.O.F. What are the perceived needs, if any, of clients relative to a secondary component? If positive, what should be the nature, scope and modality?

Problems in a Province-Wide Evaluation

As development of an evaluation design unfolded during the period September, 1974 to March, 1975, a number of problems and questions emerged; before listing and elaborating upon those problems and questions, however, more should be said about some of the characteristics of the particular program under review.

Characteristics of E.O.F.

The program can be described in terms of its general goals, method of funding, procedures for project approval, requirements for evaluation, scope, and its relationship to other components of the total school program in Alberta.

1. *General Goals.* According to the E.O.F. Policy Manual (1974), the objectives of the two components of the fund were:

Elementary — to upgrade the quality of human educational services at the classroom level by provision of funds additional to the regular foundation program grants.

Compensatory — to provide the extra assistance at the classroom level that culturally, socially, or environmentally disadvantaged students may need in order to be on an equal footing with other students.

As guiding principles for both components, the following four points were also noted in the Policy Manual. (1) *Integrated projects*, encompassing both Elementary Education and Compensatory Education (as well as other areas such as Early Childhood Services) are seen as operationally sound locally, even though funding is separated for administrative purposes at the provincial level. (2) *Local support*, from both parents and school staff, is essential. (3) *Local financial and services support* from other community organizations and individuals is seen as evidence of local commitment to the proposed projects. (4) *Emphasis of funding* will be on delivery of human services at the classroom level, services which are of direct assistance to teachers and learners.

These goals and the guiding principles which, in some sense, provided a description of the processes to be used, were stated at an extremely general level. As beginning points for an evaluation design, they were of only limited utility. The main inference to be drawn from this fact is that a great many evaluation studies are focussed on programs for which the degree of goal specification is of the type represented in this particular case. Broad general statements which seemed appropriate as statements of government policy are, in cases such as this one, almost useless for an evaluator who would prefer to begin with a well developed set of operational goals. In the E.O.F. case, the goals and guidelines helped in establishing the general direction of the study, but, in effect, it enabled (or forced) the evaluator to plan a somewhat goal-free evaluation.

2. *Method of Funding.* In Alberta, the school foundation plan provides operating grants on a per pupil basis for programs in grades 1-12. Beside the operating grants which provide instructional and support services, there are capital grants and transportation grants. As is the case in many other North American jurisdictions, the per pupil grants are weighted so that a higher grant is paid for secondary school pupils than for elementary pupils. However, decisions about expenditures are made by the local school boards within the various constraints imposed on them by negotiated agreements, overhead costs, and so on.

The E.O.F. program, as mentioned above, provided per pupil grants which were earmarked for either the Elementary or Compensatory programs. In their audited financial statements, school boards were required to report aggregate E.O.F. expenditures including a prorated cost figure for transportation costs associated with E.O.F. Therefore, local discretion, once a project had been approved, was limited to the terms set out in the proposal for funding. Such a funding mechanism clearly could have had important effects on the balance between local and provincial level decision-making about school-based programs. For the evaluation project, it meant that one had to be conscious of the interplay between centralist and decentralist forces which might have been operating in the political field.

3. *Procedures for Project Approval.* A central E.O.F. office was established in the Department of Education. One of its main functions was to review and assess each proposal and to make recommendations for approval or rejection. An E.O.F. Policy Group was set up to act as a referral body for proposals which the E.O.F. Office decided were "difficult to assess." School systems whose proposals were rejected by the E.O.F. office were given the right to appeal to the E.O.F. Policy Group.

Availability of the project proposals in the E.O.F. Office files meant that the evaluator was able to examine these and related documents in order to obtain a fairly detailed description of the projects and to be able to make judgments about the extent to which the guidelines had been adhered to by both proposal writers and the E.O.F. administration. As a source of important data, the proposals were extremely valuable. On the other hand, the existence of a mechanism for approval suggested that the evaluation should attempt to take account of local administrative "costs" associated with the project development procedures.

4. *Requirements for Evaluation.* In the E.O.F. Policy Manual and other documents, a need for evaluation of projects was set forth. It was suggested

that the evaluation design for each proposed project should have three main capabilities: (1) It should offer a broad conceptual scheme that will facilitate the evaluation of projects. (2) It should provide for definition of evaluation strategies such as source of data, kinds and types of data to be collected, and selection of analysis and reporting techniques appropriate to the conceptual scheme. (3) It should provide a system of generalization about the use and appropriateness of different evaluation procedures to various project components.

Provision was made for Monitoring Reports which were to be prepared by personnel from the Regional Offices of the Department of Education. A formal, internal evaluation was to be provided at the end of the final year of each approved project.

For the province-wide evaluation, the requirements described above had some important implications. It meant that the province-wide study and recommendations would be completed *before* the internal evaluations of the three-year projects (finishing in June of 1976) became available. There were *some* internal evaluation reports available during the spring and early summer of 1975, but most of the evaluation reports from school districts were received by the E.O.F. office after the data collection for the province-wide study had been completed. On a positive note, the requirement for evaluation might have created a readiness for evaluation which would facilitate the work of the province-wide evaluation team.

However, given the inability of some school districts to carry out the internal evaluation, there was the danger that some jurisdictions would expect the province-wide study to meet some of their local needs. In fact, during preliminary discussions with school district officials in the fall of 1974, it became quite clear that the evaluation design could not adequately satisfy the needs of local districts to have help in the design and implementation of project evaluation. Throughout the design phase, the question of how to deal with the requirement for internal evaluation came up many times; the approach taken to the question will be described later in this paper.

5. *Scope of E.O.F.* The E.O.F. program, during the 1974-1975 school year, was comprised of some 500 projects covering a wide range of subject areas in the elementary school. Every school jurisdiction in the province had participated in the program and, in most cases, had participated up to the maximum level of available funding. Given the large number of projects, the matter of selecting a sample of projects for somewhat detailed analysis was another problem. Some of the subsidiary questions on this matter were: (1) How large should the sample be? (2) Does randomization matter? (3) How does one achieve representativeness?

However, the main question seemed to be: Is there any such thing as a sample of projects which would enable one to make estimates about the nature of the population of projects? Given the variation in subject areas, goals, types of programs, etc., this main question loomed large during the design and implementation of the study.

6. *Relation to Other Components of School Programs.* One of the guidelines for E.O.F. suggested that the projects should be planned so as to contribute directly to the effectiveness of non-project classrooms and

teachers. In other words, they were not to be so different from regular school operations as to be isolated from them in any important sense.

Moreover, it was clear that part of the underlying philosophy of the special thrust in elementary schooling was a belief by policy-makers that the E.O.F. program should make a difference in the quality of schooling for all elementary pupils, not just those pupils involved directly in projects.

This meant, for the evaluation, that one always had to be conscious of the need to ask qualitative questions that went beyond questions about the performance of the projects per se. The spinoff or side effects questions, therefore, became very important and, in the end, possibly constituted the most significant part of the study.

One should also note that E.O.F. was not the only special funding mechanism in use in the province during the time period referred to above. There was, for example, an Early Childhood Services funding program, and a Learning Disabilities Fund. Each of these programs involved school district personnel in the development of proposals and gave one or another branch of the provincial Department of Education the authority to approve and, in some cases, monitor the programs. Hence, from the point of view of school district personnel, E.O.F. and the other specially funded programs may have been seen as a course of increased administrative workload and a drain on some local resources. In designing the evaluation, one became aware of the difficulty of separating E.O.F. completely from the other school programs identified in this section of the paper.

Problems and Questions

Some of the problems associated with this province-wide evaluation have been made more or less explicit in the previous section of this paper. However, it would seem to be useful to list the problems and questions and to try to focus more specifically on them as methodological problems in evaluative research.

In Table 1, a skeletal list of program characteristics and the implications each of these had for the evaluation study is provided. In the following sections of this paper, the information contained in this table will be used as a basis for discussion of: (1) how the problems were coped with, and (2) some tentative generalizations for evaluators who are faced with similar problems. For ease of identification, the implications listed in Table 1 have been numbered from 1 to 9.

The E.O.F. Evaluation

This section will not attempt to provide a complete description of the E.O.F. Evaluation Study¹. It will simply attend to some areas in which implications were identified in the preceding section. In no way is it suggested that the approaches taken in the E.O.F. study comprise an ideal way of coping with the problems. There were, in each instance, several possible ways of handling the problems. The ways used in this particular evaluation were very much the result of such non-scientific bases as limits on the availability of human and other resources for the evaluation project, the evaluator's idiosyncratic view of evaluation design, the time line for the evaluation (completion of the report was originally required for November

TABLE 1
PROGRAM CHARACTERISTICS AND IMPLICATIONS FOR EVALUATION

Program Characteristics	Implications for Evaluation
Broad General Goals	(1) Goal-Based Evaluation was Difficult
Special Funding	(2) Intensified Influence of Political Environment
Written Proposals	(3) Documentary Source of Data (4) Possible Side-Effects on Administrative Workload
Internal Evaluation Requirement	(5) Possible Readiness for Evaluation
Large Number and Variety of Projects	(6) Sampling Problem (7) Difficult to Generalize
One Component of Total School Program	(8) Difficult to Determine Long and/or Short Term Effect on Quality (9) Difficult to Separate Effects of E.O.F. from Effects of of Other Program Components

30, 1975 and was advanced to November 1, 1975), etc. They do represent a somewhat pragmatic and expedient solution to some of the problems and, as such, may be of use to others who become involved in the design and execution of large-scale evaluation projects.

Goal-based Evaluation was Difficult

Given the evaluator's favorable bias towards goal-free evaluation, the lack of specification of goals was an advantage. It was possible, of course, to ask some questions about attainment of the general goals of E.O.F., but the goal statements in no way prevented the evaluator from moving into other areas of concern. Of the eight general questions with which the evaluation study dealt, only two referred to achievement of intended objectives. The other six questions referred to side-effects and various contextual or administrative issues. When the study was completed, it became apparent that perhaps the most fruitful questions were those which had focussed on matters other than achievement of the intended objectives of the province-wide program.

Intensified Influence of Political Environment

Any evaluation study will be affected somewhat by the context of political decision-making in which it is embedded. In this case, the special funding mechanism had some implications with respect to local control over education. The whole notion of incentive funding has attached to it some

elements of centralization of control. As a matter of fact, one of the eight general questions mentioned earlier in the paper was designed to elicit responses about the special funding mechanism. Although some school trustee association officials at the provincial level stated a position against earmarked funding, a majority of the people interviewed at the school district level favored the earmarking of grants for elementary school and compensatory projects. Throughout the period of data collection and analysis, members of the evaluation team, particularly those who made site visits and conducted the 337 interviews, had to be conscious of the delicate balance between central (i.e., provincial) and local control over education. The external evaluator concluded that special funding of the E.O.F. type should be continued and even extended to secondary schools thus placing a highly positive value on the slightly centralist bias inherent in project or incentive funding. Thus, the approach taken during the evaluation was simply to focus on the funding mechanism as a legitimate evaluative question rather than merely treating it as a constraint of some kind.

Documentary Source of Data

The requirement for written proposals, which was an important part of the operating procedures for E.O.F. was of great advantage to the evaluator. A rather extensive analysis of the materials in E.O.F. central office files uncovered information which both confirmed and elaborated upon information that had been obtained from the interviews and site visits. A schema for analyzing the documents was developed especially for the study and, with minor modifications, it could serve a similar purpose for virtually any project proposal in the public schools sector of education.

The complete files housed in the central E.O.F. office were available to the evaluation team. A sample of 78 project files was selected so as to include all projects (47) which had been selected for the interviews and site visits as well as an additional 31 projects. The format for document analysis dealt with the following topics: funding emphasis, rationale, objectives, description of programs, evidence of support, evaluation components, quality of evaluation design, etc. As a way of cross-checking the data obtained from the site visits, the document analysis had good methodological strengths.

Sampling

A stratified random sample of 47 projects was drawn from the population of projects listed in E.O.F. central files. Stratification was made on the basis of size and cost of project, rural versus urban location, geographical location in the province, and subject area focus. It should be stressed that this seemed to be the best available solution rather than an absolutely flawless solution.

Given the fact that the projects were initiated by local people, they were fairly idiosyncratic in some important respects. However, examination of the total population provided some clues about types of programs and it was possible to do a certain amount of stratification before drawing the random sample. The sample of three-year projects represented 12.3% of the population.

Effects on General Quality of Education

Because E.O.F. was only one component of the total set of elementary school programs, it was never clear to the evaluation designer how its impact on quality should be assessed. Since an overall objective of the policy was to improve elementary education, an attempt had to be made to go beyond the individual projects into the realm of general qualitative assessment. In this case, the evaluator operated with the following set of implicit criteria for overall, long-term, qualitative impact:

- (1) A firm basis in educational research.
- (2) A reasonably high degree of evaluative information.
- (3) A plan for disseminating information from projects so as to have an impact on regular elementary school programs.
- (4) Development of important general skills in teachers and administrators (e.g., proposal writing, evaluation, local curriculum development, etc.).

Application of these criteria to the province-wide program had to be a highly subjective judgment in some respects. However, the availability of documents and the information gained from the site visits provided the evaluator with enough concrete information to enable him to make such a judgment. As a matter of fact, the judgment was that the above criteria had not generally been met even though E.O.F. was very favourably viewed by participants and even though there was no strong evidence to suggest that individual projects had not achieved their own objectives.

It turned out, in other words, that answering the question, "What difference did it make?", in terms of provincial-level or policy-level concerns is a rather tricky job. Our solution is legitimate only insofar as it was based on a system of criteria that seemed to be defensible on logical grounds coupled with some objective evidence.

Generalizations for Evaluation

The link between the approaches taken in these cases and the generalizations which will be presented in this section is mainly in terms of the apparent acceptability of the evaluation report to the clients for whom it was prepared. In spite of the numerous deviations from classic research design principles, the study enabled the evaluator to draw a number of conclusions and made him confident enough in the findings to make several policy recommendations to the government.

The link between the findings and the recommendations was not questioned, in any fundamental sense, by the officials in the government with whom the evaluator had first-hand contact. How the government will handle the recommendations is, of course, another matter. The main point being argued here is that a somewhat idiosyncratic and jerry-built evaluation design seemed to "work." Therefore, the generalizations which will be briefly discussed in this last section are of some practical, if not scientific, utility.

- (1) Knowledge of research design is necessary; but principles of design must be adapted to the exigencies of each situation. Rigour may have to be sacrificed in order to answer questions which are not susceptible to classic research design approaches.
- (2) Some attempt should be made to obtain cross-checking data so as to

compensate for the deficiencies usually inherent in any single data source. (For a discussion of this point, see Webb et al, 1966).

- (3) Documents, such as project proposals, are an important source of data.
- (4) Questions about side-effects should be part of virtually every evaluation design.
- (5) A variety of research paradigms should be used by evaluation designers, including such techniques as public opinion sampling, content analyses of documents, etc., as well as the more widely used techniques of the educational researcher.

Concluding Statement

A single case study, but one which dealt with questions that were large in scope, illustrated some of the ways in which practical design problems can be dealt with. The approaches described here were somewhat idiosyncratic to the situation and to the preferences of the evaluator. However, they did lead to some tentative generalizations which may help the educational evaluator and his clients—educational policy makers.

Epilogue

In February of 1976, the Government of Alberta announced that the E.O.F. (Elementary) program would continue for a further three-year period.

¹MacKay, D.A. "An Evaluation of the Educational Opportunities Fund Program" (Report to the Minister of Education, Province of Alberta). N.B. Copies of the report may be requested from the Department of Education, Province of Alberta, Edmonton, Alberta. The author of this paper is, unfortunately, unable to provide copies.

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R. D. HOGE

and

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Behavioural and Performance Correlates of Test Anxiety in Children

Relations among test anxiety, performance on a complex task, and task behaviour were investigated within a simulated teaching situation. It was predicted that test anxiety would relate negatively to performance accuracy and level of active task involvement. The latter prediction was based on some recent suggestions of a relation between test anxiety and attentiveness. Adult supportiveness was also represented as a variable in the study. Thirty-six male and thirty-six female grade 3 and 4 pupils were included in the sample. The data confirmed predictions with respect to the test anxiety-performance accuracy relation and the test anxiety-active task involvement relation. The effects of sex and the supportiveness variable are also discussed. (Dr. Hoge is Associate Professor in the Department of Psychology, Carleton University and Ms. Luce is at the same University.)

Test anxiety is generally considered to represent a disposition toward anxiety in evaluative situations. Children's test anxiety scores have been shown to relate negatively to performance on a variety of experimental tasks (e.g., Doyal & Forsyth, 1972; Lekarczyk & Hill, 1969) and, more important from a practical point of view, the scores have been shown to relate negatively to academic achievement (Hill & Sarason, 1966; Sarason, Davidson, Lighthall, Waite & Ruebush, 1960; Sarason, Hill & Zimbardo, 1964). Both scores on standardized achievement tests and teacher assigned grades have been used as indices of achievement in those studies.

An interesting hypothesis regarding the mechanisms underlying the test anxiety-performance relation has been suggested by Wine (1971) who hypothesized that the poor performance of the high anxious child is a result of an inability to attend to task demands. This hypothesis is consistent with other theoretical developments regarding test anxiety (e.g., Liebert & Morris, 1967; I. Sarason, 1972) and it is a hypothesis of some practical significance. If inattentiveness is a key factor in the poor performance of test anxious

children, then intervention efforts can be directed toward this specific area of disability. While there is some indirect support for the attention hypothesis (Sieber, 1969; West, Lee & Anderson, 1969), direct empirical support is lacking. In the present study, behavioural data reflecting level of attentiveness were collected on high and low anxious subjects. It was hypothesized, consistent with Wine's formulation, that test anxiety scores would relate negatively to a measure of active task involvement and positively to a measure of distracted behaviour.

A second objective of the study involved an attempt to assess the effects of varying levels of adult emotional support on the test anxiety-performance relation. It was hypothesized that the provision of emotional support would moderate the effects of test anxiety on performance. Kozma's (1969) finding that high test anxious children are more responsive to social approval than low test anxious children and I. Sarason's (1958) finding that, with university students, test anxious subjects perform better when provided with reassurance appeared consistent with the hypothesis advanced.

The present experiment involved presenting subjects with a complex learning task within a simulated teaching situation. The "teacher" in that situation either provided a supportive environment (reassuring comments, social reinforcement, etc.) or a neutral environment (no reassuring comments, no social reinforcement). Stronger relations between test anxiety scores and performance were predicted in the nonsupportive than in the supportive condition. Further, stronger relations between test anxiety scores and the behavioural measures of attention were predicted in the nonsupportive than the supportive condition.

Method

Subjects

Subjects were drawn from six grade 3 and grade 4 classrooms of two schools within the Ottawa Board of Education. The experimental group, composed of 36 males and 36 females, was randomly selected from the larger group. The median age of the 72 experimental subjects was eight years, ten months, and the ages ranged from seven years, nine months to nine years, nine months.

Variables and design

The principal concern of the study was with relations between test anxiety scores and the performance and behaviour measures. These relations were explored by calculating correlation coefficients for (a) the total sample of subjects, (b) for each of the two sexes, and (c) for each of the two teacher supportiveness conditions.

Test anxiety was measured by the Test Anxiety Scale for Children (TASC) which is a 30-item paper and pencil test developed by Sarason et al. (1960). One other scale, the 27-item Defensiveness Scale for Children (DSC) was also administered. This scale provided a check on response distortions within the TASC (Sarason et al., 1964).

The two levels of the teacher supportiveness variable, supportive-nonsupportive, were defined in terms of two roles assigned the "teacher," a female confederate of the experimenters. Three aspects of the role were

critical to the manipulation: the general attitude assumed by the “teacher” toward the child (either warm or neutral), the provision (or withholding) of social reinforcement and the provision (or withholding) of supportive comments. The “teacher” was given considerable training in playing the two roles. Validity data regarding the manipulation are presented in the results of the study.

Experimental task

The tasks used in the study were basically concept formation problems which had been adapted from the Attribute Games and Problems kit prepared by McGraw-Hill. A set of 10 problems was developed, each problem being composed of a matrix of 9 or 16 cells and each problem defining a different concept. The concepts were formed from a set of figures which varied in terms of three properties: shape (square, circle, triangle, diamond), color (red, yellow, green, blue) and size (large or small). The subject, presented with an incomplete matrix, was to discover the concept from the exemplars presented using a pool of figures from which to form the concept. The problems varied in terms of difficulty, with the easier problems presented earlier in the series.

The subject was given four problems on each of seven three-minute trials. Subjects were told to work on the problems in order and to complete one problem before moving on to the next. At the end of the three minute interval, the “teacher” stopped the subject and checked the first problem. If that problem was solved correctly, she provided feedback as described below and moved on to check the second problem. As soon as she encountered a problem that was incomplete, incorrect, or not attempted, she ceased checking (though all problems were recorded). Correct problems were removed and new problems added so that the subject had four problems before him.

Procedure

The task instructions and task feedback were identical for all subjects. Subjects were told that they would be helping in the testing of a new learning task. The nature of the task was explained and a sample problem was presented. Subjects who solved the problem correctly on the first attempt were provided social reinforcement in the supportive condition and simply told they were correct in the nonsupportive condition. Subjects who failed to solve the problem were provided assistance by the “teacher.” This assistance was accompanied by a supportive comment only in the supportive condition. To create a further expectation of supportiveness in the supportive condition, the teacher interacted with the subjects in a friendly manner for a brief period. This interaction did not take place in the nonsupportive condition. All subjects were then given additional task instructions.

The first experimental trial began with the “teacher” setting the stop watch within view of the subject and then telling the subject to begin. The “teacher” sat with her back to the subject during the experimental trials and did not initiate interactions with the subject during that interval. Attention requests on the part of the subject were responded to in a standardized

fashion. For example, if the subject asked a question regarding the task, the “teacher” would respond in the supportive condition by saying, “I want you to work on the task yourself. You have been working well so far.” The supportive comment would not be added in the nonsupportive condition.

After each three-minute interval, the teacher recorded all responses to the four problems. The subject was informed about problems solved correctly and was given social reinforcement in the supportive condition. When the “teacher” encountered an incorrect or incomplete problem, she informed the subject and provided appropriate feedback (“This problem is wrong”, “You have not completed this problem”, “You have not attempted this problem”). This feedback was accompanied by a supportive comment in the supportive condition. Following the seventh trial, the teacher briefly interacted with the subject and provided all subjects with reassurance regarding their performance.

Dependent measures

Two types of dependent measures were used in the study, performance measures and behaviour measures. Two of the performance measures were treated as indices of performance accuracy: total number of problems correctly completed over the seven trials (Correct) and the number of problem cells correctly filled on a trial relative to the number of cells attempted (RelCorrect). The latter measure was averaged over the seven trials. The other two performance measures were treated as persistence indices: total number of problems completed across the seven trials (Completed) and the number of cells attempted on a trial relative to the number of cells available on the trial (RelAttempted). The latter measure was averaged across the seven trials.

The behavioural measures were derived from the video tapes which presented a record of the subject’s behaviour from Trial 1 through Trial 7. Three basic time measures were taken from the tapes: total time active (Active), defined as subject actively manipulating materials; total time passive (Passive), defined as subject looking at material but not actively manipulating; and total time distracted (Distracted), defined as all other activities. Active is treated as a direct measure of attention and Distracted treated as a direct measure of inattention. It is recognized that some ambiguity might attach to the Passive measure.

Results

Reliability and validity data

Reliability data for the behavioural measures are in the form of interobserver reliabilities calculated for two observers on a sample of 17 trials. The reliability coefficients were .98 for Active and .96 for Passive.

Validity data for the supportiveness manipulation were taken from the video tapes. A count was made of the number of task relevant comments, socially reinforcing comments, and supportive comments made by the “teacher” during the six intertrial intervals. A sample of 18 subjects, nine from each of the two conditions, was employed in the count. As expected, the number of task relevant comments did not differ greatly between the two conditions, 100 in the nonsupportive and 102 in the supportive condition.

There were, however, the expected differences in frequency of supportive and socially reinforcing comments. Only one such comment was recorded in the nonsupportive condition, while a total of 88 were recorded in the supportive condition. This represents an average of 1.64 such comments for each subject in each of the six intertrial intervals.

Relations among dependent measures

Intercorrelations on the dependent measures are presented in Table 1. The significant negative relations between the accuracy measures (Correct and RelCorrect) and the persistence measures (Completed and RelAttempted) were unexpected but are consistent with a pattern described below. Two of the behavioural measures, Active and Distracted, correlated significantly with the Completed measure. High levels of problem completion were associated with low levels of active task involvement and high levels of distractability. In summary, it appeared that subjects who spent a high percentage of time in active task involvement completed relatively few problems but were more accurate than those subjects displaying higher levels of distraction.

TABLE 1
INTERCORRELATIONS BETWEEN DEPENDENT MEASURES

	Completed	RelAttempted	Correct	RelCorrect	Active	Passive
RelAttempted	.94**					
Correct	-.29*	-.29*				
RelCorrect	-.43**	-.43**	.39**			
Active	-.42**	-.38**	.02	.01		
Passive	.22	.18	.09	.08	-.89**	
Distracted	.54**	.51**	-.19	-.18	-.61**	.18

* $p < .05$ (two-tailed test)
** $p < .01$ (two-tailed test)

TABLE 2
CORRELATIONS AND PARTIAL CORRELATIONS BETWEEN TASC SCORES
AND DEPENDENT MEASURES ($N=72$)

	TASC	TASC (DSC controlled)
Completed	.33**	.32**
RelAttempted	.32**	.35**
Correct	-.31**	-.29**
RelCorrect	-.19*	-.21*
Active	-.20*	-.06
Passive	.11	.01
Distracted	.24*	.15

* $p < .05$ (one-tailed test)
** $p < .01$ (one-tailed test)

Relations between TASC scores and dependent measures

Table 2 presents intercorrelations between TASC scores and the dependent measures along with the correlations that were obtained where the effect of DSC were partialled out. The correlations are based on the entire set of 72 subjects. A one-tailed test was employed since there were *a priori* hypotheses with respect to direction of effect.

It can be seen from Table 2 that significant negative relations obtained between TASC scores and the accuracy indices. It can also be observed that significant positive relations obtained between TASC scores and the two persistence measures, Completed and RelAttempted. High test anxiety scores were associated with relatively high levels of problem completion and relatively low levels of performance accuracy. Significant relations between the personality scores and two of the behavioural measures, Active and Distracted, were also obtained, though the levels of significance were not maintained where DSC was used as the covariate. In general, high TASC scores were associated with relatively low levels of active task involvement and relatively high levels of distraction.

Table 3 presents a comparison of the TASC-dependent measure relations for two sexes. While the direction of relations between TASC scores and the various measures is the same for both sexes and follows the pattern outlined above, the test scores are more highly correlated with performance for female subjects than for male subjects. However, TASC scores showed no systematic relation to the behavioural measures in the case of females, while they showed the predicted relations in the case of males. The differences between *rs* approached statistical significance in three cases: RelCorrect ($Z = 1.64, d.f. = 33, p < .06$), Active ($Z = 1.54, d.f. = 33, p < .07$), and Distracted ($Z = 1.48, d.f. = 33, p < .07$).

TABLE 3
CORRELATIONS BETWEEN TASC SCORES AND DEPENDENT MEASURES BY
SEX OF SUBJECT

	TASC Scores	
	Male Subjects (n=36)	Female Subjects (n=36)
Completed	.27	.44**
RelAttempted	.25	.44**
Correct	-.24	-.41**
RelCorrect	-.01	-.39**
Active	-.41**	.05
Passive	.29*	-.06
Distracted	.38**	.03

* $p < .05$ (one-tailed test)
** $p < .01$ (one-tailed test)

Effect of the supportiveness manipulation

It had been predicted that the supportiveness manipulation would have an effect on the relation between TASC scores and performance. Specifically, it had been predicted that there would be a stronger relation between the

TABLE 4
CORRELATIONS BETWEEN TASC SCORES AND DEPENDENT MEASURES BY
CONDITIONS

	TASC Scores	
	Supportive Condition (n=36)	Nonsupportive Condition (n=36)
Completed	.51**	.12
RelAttempted	.46**	.19
Correct	-.37**	-.26
RelCorrect	-.36**	-.04
Active	-.31*	-.05
Passive	.18	.03
Distracted	.35**	.07

* $p < .05$ (one-tailed test)

** $p < .01$ (one-tailed test)

variables in the nonsupportive condition than in the supportive condition. Table 4 presents a comparison of the correlations obtained in the two conditions. It can be seen from the table that the direction of relations is the same in both conditions, but that the relations are stronger in the supportive condition than in the nonsupportive condition. A comparison of the r pairs yielded a significant difference in one case, Completed ($Z = 1.80$, $d.f. = 33$, $p < .05$), and approached significance in another case, RelCorrect ($Z = 1.38$, $d.f. = 33$, $p < .09$).

Discussion

TASC scores were found to be associated with performance accuracy within the complex learning task employed in this study. This finding is consistent with the results reported by Doyal and Forsyth (1972), Lekarczyk and Hill (1969) and others and lends further support for the predictive validity of the TASC scale. The data of the study also support the attentional hypothesis offered by Wine (1971) and thereby provide some insight into the dynamics of the anxiety-performance relation. As had been predicted, TASC scores were associated negatively with active task involvement and positively with distracted behaviour. The generality of these results is affected, of course, by the outcome of the sex and supportiveness analyses.

Relations between TASC scores and the performance measures were in the same direction for male and female subjects, but the correlations were higher for females than for males. This is consistent with Campeau's (1968) finding that anxiety scores predicted performance better for females than for males. The finding that TASC scores were more highly correlated with behavioural measures for males than for females contradicts findings that girls are less reluctant to acknowledge anxiety on questionnaires (Phillips, Martin, & Meyers, 1972; Ruebush, 1963), but the finding is consistent with reports that boys are more likely to display overt signs of anxiety (e.g., Sarason et al., 1960).

It had been hypothesized that the supportiveness manipulation would function to alleviate anxiety in the high anxious subject and that, therefore, there would be a weaker relation between anxiety scores and both performance and behaviour within the supportive than the nonsupportive condition. The findings were contrary to prediction. While the direction of relations was the same in both conditions, the relations were consistently stronger in the supportive than in the nonsupportive condition. The analyses do not, of course, provide a conclusive test of the issue, but the suggestion is that a higher degree of anxiety was aroused in the supportive condition than in the nonsupportive condition, and that this higher level of anxiety is reflected in both behaviour and performance.

A possible explanation for the above finding relates to the nature of the supportiveness manipulation. While subjects within the supportive condition were provided with social reinforcement and emotional support, the manipulation may have also involved a communication of expectations. Among comments made by the "teacher" in the supportive condition were "I know you can do these problems", "I know you will do well", etc. These comments were designed to provide reassurance to the subject, but they may have also functioned to communicate high expectations and thereby have enhanced the evaluative nature of the situation. These findings suggest that further attention should be paid to the effects of different forms of social support on the highly anxious subject.

There are, of course, a number of factors operating to limit the generality of these results, and it would be desirable to replicate the study within a classroom setting with a more direct measure of attention. Within those limits, however, the results are viewed as interesting from a number of points of view. The findings of the study again affirm that test anxiety relates negatively to the performance of the child within evaluative settings. The data also lend support to the hypothesis that inattentiveness to task demands constitutes a key factor in the test anxiety effect and thereby lend credence to those intervention programmes (e.g., Phillips et al., 1972) which stress attention training for the highly anxious child. Finally, the suggestion that emotional support accompanied by the communication of high expectations may have the effect of enhancing anxiety might serve as a caution to teachers, counsellors and parents dealing with anxious children.

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Teachers' Attributions of Student Ability

The purpose of this study was to examine the effects of varying orders of pupil achievement information on teachers' attributions of pupils' abilities. Two ages of pupils were used as stimulus persons (SPs), a 5-year-old male pupil and an 18-year-old male pupil. Two orders of achievement information were used: ascending success (AS) and descending success (DS). The subjects were 60 student teachers, randomly selected from volunteers and randomly assigned to four treatment groups. A two-by-two factor design was used with two levels of each factor. Factor A was age of pupil (a five-year-old and an eighteen-year-old) and Factor B was order of achievement information (ascending success and descending success).

Three dependent variables were examined in the main part of the study: recall of success, prediction of future success, and estimate of ability. A two-way analysis of variance revealed a strong overall primacy effect on order of information effect on two of the three dependent variables, prediction and recall, and a significant but not as strong primacy effect on the third dependent variable, estimate of ability. A posteriori Scheffé tests revealed that for all dependent variables, the primacy effect was stronger for the children-pupil conditions than for the adult-pupil conditions.

The correlations among the three dependent variables was negative and significant between prediction and estimate of ability, and was positive and significant between recall and estimate of ability.

Subjects were asked to estimate the level of confidence with which they made their predictions and ability estimate. They also completed a locus of control (Rotter, 1966) questionnaire and a cognitive complexity matrix (Bieri et al., 1966). Correlational analysis revealed that cognitive complexity was negatively and significantly related to degree of confidence, and was positively and significantly related to prediction. As a uni-dimensional trait, locus of control was not significantly related to any of the dependent variables. (Dr. Therrien is Assistant Professor in the Department of Elementary Education, The University of Alberta.)

Since the publication of Rosenthal and Jacobson's research in 1968, a number of research studies have been designed to examine further the hypothesis that a teacher's expectations of a pupil may affect that pupil's

classroom behaviour. Twenty-five such studies reviewed by Baker and Crist (1971) have produced evidence supporting the “expectancy effect” hypothesis. However, little is known about how or why the effect occurs. What processes are operating which result in teachers’ expectancies being fulfilled? How do expectancies develop? Particularly, how do erroneous expectancies develop?

The purpose of this study was to examine the latter question: How do erroneous expectancies develop? In particular, teachers’ perceptions of pupils were examined in relation to their attributions of ability to those pupils. Attribution refers to the process by which an individual (in this case, a teacher) attributes causes to the behaviour of others (in this case, pupils). Though behaviour may be attributed to many internal and external causes, this study dealt only with attribution of ability, a single internal cause. An attempt was made to discover whether the *order* of presentation of information about the pupil’s problem solving behaviour would induce erroneous perceptions of the behaviour and biased attributions of ability. The pupil behaviour “information” was presented on a video tape in which a pupil solved a sequence of ten problems. Each problem was a multiple choice question. Four solutions were presented and the pupil was required to select the correct solution. The *order* of the segments of the tape was systematically varied.

In summary, the problem being dealt with in the study may be phrased as follows: How does order of presentation of information affect teachers’ attributions of pupil abilities?

The Theoretical Framework

The works of Fritz Heider (1944, 1954a, 1954b, 1958) in the area of person perception have stimulated research on attribution, the process of assigning causes to the behaviour of others. In Heider’s words, attribution is the “linking of an event with its underlying conditions” (Heider, 1958, p. 89). These underlying conditions may be seen as internal to the persons being perceived or external, that is, in the environment.

A survey of the research literature in social psychology results in several propositions about the nature of attribution.

1. The attribution to causes may be made to internal (personal) causes or to external (impersonal) causes. Experimental work has revealed a tendency to attribute actions to internal causes even in the face of evidence of external causes (Jones & Harris, 1967).

2. Causal attribution differs depending on the level of ego-involvement. Observers more frequently attribute causes to the actor, while actors attribute causes to the environment. This is particularly so in the case of assigning the causes of failure (Johnson, Feigenbaum & Wieby, 1964; Beckman, 1970).

3. Success and failure may be attributed to ability, luck, effort or task difficulty. The four elements may be represented diagrammatically in the following way:

stability	Locus of control	
	internal	external
stable	ability	task difficulty
unstable	effort	luck

The research indicates that consistency in performance yields attribution to ability and task difficulty (Frieze & Weiner, 1971) and that very difficult or very easy tasks yield attributions to ability and/or luck whereas tasks of intermediate difficulty yield attributions to effort (Weiner, Hickhausen, Mayer & Cook, 1972).

4. Attribution of ability appears to be affected by the order or presentation of the success/failure information. A primacy effect results when the information is presented in a continuous sequence. When the sequence is interrupted, either by irrelevant activity or by forced interim impression formation, the primacy effect is either weakened or a recency effect results (Luchins, 1957a, 1957b, 1958).

5. When adults are viewing the problem solving behaviour of other adults, attribution of ability is influenced by a primacy effect (Jones, Rock, Shaver, Goethals & Ward, 1968).

6. Both the cognitive complexity of the individual and the perceived locus of control may affect the attributions he makes (Streufert & Streufert, 1969; Rosencrantz & Crocker, 1965; Mayo & Crockett, 1964; Petronko & Perin, 1970; Feather, 1967).

The studies cited above were conducted with adults as subjects and adults as stimulus persons. The present study was conducted with teachers as subjects and with pupils as stimulus persons.

Design and Procedures

The purpose of this study was to examine teachers' perceptions of pupil ability and to determine whether their perceptions are distorted in any systematic way by the *order* or *sequence* of information they receive about the pupil.

Sixty students were randomly selected from 68 volunteers who were enrolled in spring session elementary education courses. The 60 students were then randomly assigned to one of four treatment groups. Each group saw a video tape presentation of a pupil involved in solving 10 problems. The tape showed the pupil and tester, the problems, and the degree of success or failure on the part of the pupil in solving the problems.

The video tapes viewed by groups 1 and 2 showed a five-year-old involved in solving 10 shape pattern problems. Both tapes were constructed from exactly the same sequence. The *only* difference between the tapes was the order of the insertion of the words "successful" or "unsuccessful" (with attending narration) after each problem. That is, the viewer was told after viewing each problem segment whether the pupil was successful or unsuccessful in solving the problem. Each group of subjects saw the same sequence of problems but a different sequence of successful and unsuccessful information. The two patterns of sucessful/unsuccessful information could be pictured thus:

	tasks									
	1	2	3	4	5	6	7	8	9	10
tape 1	ns	ns	ns	s	ns	s	ns	s	s	s
tape 2	s	s	s	ns	s	ns	s	ns	ns	ns

Though the order of successful/not successful information varied, the actual success rate on the two tapes was the same: five out of 10 correct. Group 1 saw a pattern of *increasing success* and group 2 saw a pattern of *decreasing success*.

The video-tapes viewed by groups 3 and 4 followed the same general pattern as tapes one and two except that they presented an 18-year-old solving analogies. Again the two tapes were exactly the same except for the order of success/failure information.

	tasks									
	1	2	3	4	5	6	7	8	9	10
tape 3	ns	ns	ns	s	ns	s	ns	s	s	s
tape 4	s	s	s	ns	s	ns	s	ns	ns	ns

The success rate was 5 out of 10 on both tapes, with tape three depicting *increasing success* and tape four depicting *decreasing success*.

Following the video tape, subjects were presented with a questionnaire requiring three main responses:

1. Given 10 additional problems similar to those on the video tapes, each subject was asked to *predict* for each of the 10 problems the success of the pupil they saw on the tape. Possible range: 0 to 10 inclusive.
2. Each subject was asked to *recall* how many successes the pupil had actually achieved on the tape. Possible range: 0 to 10 inclusive.
3. As well, each subject was asked to *estimate*, on an eleven-point scale, the ability level of the pupil. Possible range: 0 to 10 inclusive. In addition, subjects completed the Bieri test of cognitive complexity (Bieri, Atkins, Briar, Leaman, Miller & Tripodi, 1966) and the Rotter I/E test of locus of control (Rotter, 1966).

Results

A two-way analysis of variance was conducted on each of the three criterion measures: prediction, recall, and estimate of ability. Main effect A represents age of pupil and main effect B represents the order (ascending or descending) of the information presented.

TABLE 1
PREDICTION OF SUCCESS: ANALYSIS OF VARIANCE

Source	S.S.	d.f.	M.S.	F-ratio	Probability
A (pupil)	.88	1	.88	.45	.5
B (order)	18.70	1	18.70	9.47	.003
AB	4.35	1	4.35	2.20	.14
Error	94.79	48	1.98		

The analysis of variance yielded several sets of results. The statistical significance of the order effect was established. The direction of the order effect was determined by examining the table of means (Table 2).

TABLE 2
PREDICTION OF SUCCESS: TABLE OF MEANS

	B1 (ascending)	B2 (descending)
A1 (5-year-old)	4.077	5.857
A2 (18-year-old)	4.917	5.538

Information from the two tables indicates a significant primacy effect in the prediction of success.

TABLE 3
RECALL OF SUCCESSES: ANALYSIS OF VARIANCE

Source	S.S.	d.f.	M.S.	F-ratio	Probability
A (age)	.73	1	.73	1.30	.26
B (order)	19.87	1	19.89	35.28	.00000
AB	.005	1	.005	.009	.92
Error	27.04	48	.56		

TABLE 4
RECALL OF SUCCESSES: TABLE OF MEANS

	B1 (ascending)	B2 (descending)
A1 (5-year-old)	4.39	5.64
A2 (18-year-old)	4.17	5.39

The statistical significance of the order effect was established. The direction of the order effect was determined by examining the table of means (Table 4). Information from the two tables indicates a significant primacy effect in the recall of successes.

TABLE 5
ESTIMATES OF ABILITY: ANALYSIS OF VARIANCE

Source	S.S.	d.f.	M.S.	F-ratio	Probability
A (age)	36.66	1	36.6	18.93	.00
B (order)	7.46	1	7.46	3.85	.05
AB	1.06	1	1.06	0.55	.46
Error	92.94	48	1.97		

The statistical significance of the age of pupil effect was established. The order effect approaches significance. The table of means indicates the direction of the effects (Table 6). Estimates of ability of the child-pupil were significantly higher than estimates of ability of the adult-pupil. Again, a primacy effect is indicated by the means.

The Scheffé procedure (Winer, 1971) was used to compare individual groups in an attempt to locate the differences which contributed to the

TABLE 6
ESTIMATES OF ABILITY: TABLE OF MEANS

	B1 (ascending)	B2 (descending)
A1 (5-year-old)	5.39	5.86
A2 (18-year-old)	3.42	4.46

ANOVA results. At the suggestion of Edwards (1972, p. 150) the α level was set at .90 to counteract somewhat the conservatism of the Scheffé test. The results are reported in Tables 7, 8, and 9.

TABLE 7
PREDICTION OF SUCCESS: SCHEFFE TEST

	Mean	S.D.	(Scheffé) F obs	F critical
Group 1 (n=13)	4.08	1.50	10.82	6.69
Group 2 (n=14)	5.86	1.03		
Group 3 (n=12)	4.92	2.02	1.22	6.69
Group 4 (n=13)	5.54	.88		

TABLE 8
RECALL OF SUCCESS: SCHEFFE TEST

	Mean	S.D.	(Scheffé) F obs	F critical
Group 1 (n=13)	4.39	.65	18.94	6.69
Group 2 (n=14)	5.64	.75		
Group 3 (n=12)	4.17	.94	16.44	6.69
Group 4 (n=13)	5.39	.65		

The results of the Scheffé tests indicate that for the prediction of success variable (Table 7), the child-pupil condition accounted for the major portion of the order differences found in the analysis of variance. The differences between the adult-pupil conditions are in a primacy direction but do not reach statistical significance.

Table 8 indicates that recall of success is significantly different (in a primacy direction) in both the child-pupil and adult-pupil conditions.

The child-pupil vs. adult-pupil differences in estimates of ability hold true across both ascending and descending conditions (Table 9). The primacy effect tendency noted in the analysis of variance results is weakened when individual groups are compared. The tendency is in a primacy direction but does not reach statistical significance in either comparison (Table 9).

TABLE 9
ESTIMATES OF ABILITY: SCHEFFE TEST

	Mean	S.D.	(Scheffé) F obs	F critical
<u>Order Effect</u>				
Group 1 (n=13)	5.39	1.89	.78	6.69
Group 2 (n=14)	5.86	1.17		
Group 3 (n=12)	3.42	1.31	3.52	6.69
Group 4 (n=13)	4.46	1.05		
<u>Age Effect</u>				
Group 1 (n=13)	5.39	1.89	12.48	6.69
Group 3 (n=12)	3.42	1.31		
Group 2 (n=12)	5.86	1.17	6.78	6.69
Group 4 (n=13)	4.46	1.05		

The criterion measures were each considered to be tapping the same underlying construct, attribution of ability. However, it appears that each of the measures is tapping a different variable and no one alone can be considered the sole measure of attribution of ability.

TABLE 10
CORRELATIONS AMONG CRITERION MEASURES

	Prediction	Recall	Estimate
Prediction	1.0	.205	-.28 ^a
Recall		1.0	.29 ^a
Estimate			1.0

^a Correlation significant at .05 level.

There was no significant correlation between the criterion measures (which were transformed to susceptibility to primacy effect scores) and the cognitive complexity and locus of control measures.

Discussion of Results

In all instances, the data support the notion that the subjects' final attributions are influenced by their initial impressions. Under some conditions the influence is very strong.

The recall scores indicate a strong primacy effect regardless of the age of the stimulus person. This finding not only supports the findings of Jones et

al. (1968) but adds two additional pieces of information. First, adults who are or intend to be teachers do not behave differently with respect to primacy influences on recall than do adults who are not teachers. Second, the age of the stimulus person does not reduce primacy effects on recall.

When predicting future successes, subjects' prediction scores indicate a primacy effect which is very strong in relation to a child-pupil and evident but not strong in relation to an adult-pupil. The strong primacy effect in prediction found by Jones et al.(1968) occurred when the prediction involved information on 30 tasks whereas this study involved prediction based on viewing only ten tasks.

The quantity of information available to the subjects of this study who viewed the adult-pupil may have been too little (by comparison with the Jones subjects) thus the primacy effect, though evident, was weak. Since the primacy effect was strong when subjects were viewing the child-pupil, it may be that the quantity of information provided to the child-pupil subjects need not be as great as for adult-pupil subjects. In addition, the subjects of this study were all studying elementary education (i.e., teaching of children under 12 years of age) and thus may focus differently on adult-pupils than on child-pupils.

When estimating ability levels, subjects' estimates indicate a significant overall primacy effect which is stronger for child-pupil conditions than adult-pupil conditions. The strength of the primacy effect here is far less than for the other dependent variables. Again the subjects viewing adults were perhaps less susceptible to a primacy effect than were subjects of the Jones et al. (1968) study; less information may be the reason.

Overall, a primacy effect in attribution of ability was established. The fact that subjects were teacher trainees did not appear to affect the processes. In fact, whereas elementary education students might be expected to resist a primacy influence because of their knowledge of children, the groups who viewed the child-pupil appeared to have been more strongly influenced.

An interesting finding for which there appears to be no precedent in the literature, was that subjects predicted significantly higher ability levels for the child-pupil than for the adult-pupil, regardless of order effects. One plausible explanation is that the subjects of the study were studying elementary education. Thus, when faced with interpreting the behavior of an 18-year-old pupil, the reference point was their knowledge of themselves rather than knowledge of pupils of that age. This may have induced subjects to assess their own abilities in relation to the tasks, and compare the adult-pupils' performance (and ability) with their own. Finding the tasks quite simple themselves, they then estimated low ability on the part of the adult-pupil. This sort of comparison-with-self was unlikely to have occurred when subjects were viewing the 5-year-old pupil.

Implication for Teaching and Research

The influence of the primacy effect on a teacher's impressions of children can impair the teacher's effectiveness. Though this premise has yet to be thoroughly explored through research, one can conceive of a variety of ways in which erroneous judgments might affect the teaching-learning process.

As teachers become more involved in curriculum development, their diagnostic skills will become increasingly important in overall planning. To match the curriculum to the needs of the child requires accurate assessment of these needs. Erroneous judgments in assessment can result in a poor match of program to child and the child's learning may be impaired.

A child's self-concept grows as he sees himself reflected in the behavior of significant others toward him. If a teacher's impressions of a child are biased, his behavior toward the child may cause the child to develop the same biases towards himself. He may not only develop an inaccurate self-concept, but one which is negative as well.

The child who consistently creates the impression of being a "slow starter" may never be able to shake this impression. Not only might he live under the stigma of "slow starter" with one teacher, but with all teachers as records and informal information are passed from one teacher to the next.

It would appear that erroneous impressions of any kind could be detrimental to the child, but primacy effect errors may be much more vile than other kinds. Primacy effect errors could result in a teacher never recognizing the learning which is taking place (or perhaps not taking place). Recency errors, on the other hand, may not negate learning which is taking place if the child is increasingly successful. However a productive balance would seem to be a situation in which impressions are accurate but multivariate and flexible, capable of addition and modification as new information is acquired and meshed with all previous information. This would appear to require a relatively high degree of cognitive complexity in the individual teacher. If tentative recommendations for action were to be made on the basis of this study, they would be the following:

1. Teachers need to be made explicitly aware (both in preservice and inservice preparation) of the primacy effect and how it operates in the attribution of ability. They must be alerted to the possible dangers of allowing first impressions to distort attributions.

2. If it can be assumed that Luchins' work holds true for teachers and children, continuous teacher anecdotal record keeping on individual children (with an emphasis on factual information being continually added) may serve to dilute the primacy effect.

3. If the element of cognitive complexity, which induced the subjects to hesitate in making strong attributions, was a greater degree of differentiation, then deliberate attempts must be made to help teachers become increasingly multidimensional in forming their impressions of the individual children.

Directions for Further Research

The results of the study would seem to indicate three fronts on which further research needs to be conducted.

Attribution of ability and teaching functions. Since this study was related to only one teaching function, namely assessment through observation, further studies need to be conducted in connection with other teaching functions. The primacy effect may extend beyond impression formation to planning of curricula following diagnosis, to interaction with children, to affection for the children, and to evaluating the work of

children. The active involvement in teaching may affect the teacher's attributions differently than does the observation of teaching. Studies similar to this one could be conducted which add further teaching functions to the design.

Eroding the primacy bias. Replication of Luchins' work as it relates to teachers and children would be most useful. Knowledge of how teachers might learn to avoid the primacy effect would have implications for teacher preparation. A better understanding of the relationship of cognitive complexity to attribution would have implications not only for teacher education but perhaps for screening and selection as well.

Attribution theory and teaching. This study dealt with *one* way in which attribution of *ability* can be influenced. Many other aspects of attribution theory deserve attention. Perception of role behavior may affect attribution of ability. Order of information may affect the attribution of attitude. The relationship of attribution of ability and attribution of attitude is virtually unknown. All of these relationships and many others may be relevant to education.

A program of further experimental and field research is needed to provide the information necessary to answer the many questions about the relationship between attribution and education.

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An Examination of Cumulative Folder Information Used By Teachers in Making Differential Judgments of Children's Abilities

One of the persisting aspects of the teacher expectancy literature is the degree to which various sources of naturalistic information influence the teacher's expectancy set. A questionnaire, designed to examine the effects of the child's sex, attractiveness, ability, and home background upon teacher's expectations, was administered to 180 male and 310 female public school teachers in eight school systems.

Teachers were asked to make five predictions about a child described in the questionnaire, including level of creative ability, intellectual ability, type of educational grouping, degree of vocational training expected to be obtained, and quality of teacher-student interactions. The analysis of the data indicated several individual and multiple influences of characteristics of children upon the predictions made by teachers. (Dr. Adams is Assistant Professor of Family and Human Development at Utah State University; Dr. Cohen is Assistant Professor of Child Development and Family Studies at Purdue University.)

Research on the effects of teacher expectations and student performance has proliferated in the last few years. Following the original study by Rosenthal and Jacobson (1968), several investigators have attempted to replicate the "self-fulfilling prophecy" hypothesis (Rosenthal, 1969; Claiborn, 1969; Brophy & Good, 1970; Fleming & Antonnen, 1971; Jose & Cody, 1971; Rothbart, Dalfen & Barret, 1971; Mendels & Flanders, 1973). A close examination of this research suggests that approximately half of the studies support the original Rosenthal and Jacobson research, while the remaining half does not. However, Rosenthal (1971a, 1971b, 1973) and Brophy and Good (1974) have recently summarized research from both laboratory and naturalistic settings which indicates strong support for the

existence of an interpersonal expectancy effect across several situational settings.

One of the questions which remains to be investigated is, "To what degree do various sources of information influence the development of the teacher's judgments about which children are expected to achieve or do well in school?" Several investigators (Kaplan & Sprunger, 1967; Beez, 1970; Mason, 1973) have shown that information found in children's psychological evaluation reports can have influential effects on teacher's attitudes and behavior. One common finding regarding such information has been that teachers will express lower expectations for a student following the reading of negative rather than positive evaluations about that student. Paralleling these investigations, Clifford and Walster (1973), using materials which they constructed, report that when shown pictures of children of varying degrees of physical attractiveness but with similar report cards, teachers' expectancies were strongly influenced by the child's physical attractiveness (i.e., highly physically attractive children were more often predicted to be high on the following attributes than were less physically attractive children: intelligence, interested parents, education potential, and peer relations). Likewise, LaVoie and Adams (1974) and Adams and LaVoie (1974), using the technique reported by Clifford and Walster, demonstrated that report card grades regarding the child's conduct or citizenship behavior have apparent biasing effects on teachers' expectancies. Furthermore, these two studies suggest that information about a child's conduct may be more influential than his degree of perceived physical attractiveness when the two factors are present in a given situation.

Therefore, the present study was undertaken in an attempt to evaluate several sources of information found in students' cumulative folders on teachers' expectancy sets. Types of information included for evaluation consisted of the child's degree of attractiveness, ability, sex, and family background.

Method

Subjects

The head administrators of twelve school districts in two midwestern states were contacted by telephone to obtain permission to use teachers from their district in the study. Eight of the administrators agreed to permit their teachers to participate in the study and provided a directory which listed the teachers in the system. The number of elementary school teachers in each of the eight school districts ranged from 80 to 1,000. Twenty percent of the teachers listed in each directory were randomly selected and requested by mail to serve as subjects in the study. Of this sample, 81% agreed to participate.

A total of 490 elementary school teachers (180 men and 310 women) participated in the study. All teachers held at least a four-year college degree and had 5.5 years of teaching on the average. The mean age of these teachers was 36.8 with standard deviation of 7.1 years.

Cumulative Folder Information

Official-looking cumulative folders similar to those being used in each of the school districts were assembled by a local printing company for use in

this study. Each folder included report card information for kindergarten through second grade pertaining to academic and social or citizenship-type behavior. All such information indicated a child who was performing slightly above average academically. Included in the record were statements by the child's physician on his health and immunization history (all such medical data indicated only a healthy child). These kinds of cumulative folder data were held constant across all folders.

Level of Attractiveness and Sex of Child. Sex of the child and level of physical attractiveness were varied in each of four categories: A photograph of a smiling boy or girl of high or low physical attractiveness (as determined from the combined ratings of a previous study by LaVoie and Adams, 1974) was included in each of the cumulative folders (such photographs were commonly included in each of the sampled schools, a practice, incidentally, which is quite common throughout the United States).

Folder statement on the home. Additional information regarding the child's family background was also varied. Statements about this type of information were taken *verbatim* from actual cumulative folders currently being used in a school district which did not participate in the present study. One set of statements included remarks indicating that the child came from either a middle-class home climate:

_____ comes from a highly educated home. His mother completed her Bachelor's degree and his father has a Master's degree in business. The father is employed in a high-status position (executive administration), while the mother is a homemaker. Mrs. _____ has shown much concern for _____'s school efforts and activities.

or from a lower-class home climate:

_____ comes from a home where neither parents read. Mrs. _____ has completed the equivalent of an eighth grade education. No records are available concerning the father. The mother is rarely employed, while the father is apparently absent or not living with the family. Mrs. _____ has shown only minimal concern for _____'s school efforts and activities.

Folder statement on the child. The second set of information included a statement about the child's general ability. These statements indicated either a negative comment:

_____ has problems in communicating with the teacher and other children in the classroom. _____ appears uneasy in interpersonal communications. _____ uses an excessive amount of 'street talk' in the classroom. The child has never demonstrated leadership needs. Furthermore the child occasionally comes to class in unkept clothing that is dirty and foul to the nose.

or a positive statement:

_____ has demonstrated a remarkable ease in communicating with teachers and fellow students. His verbal skills are to be considered a strong point. Frequently, _____ assumes a leadership role, thus providing direction for other students to follow. The child is always neat and clean in appearance.

Evaluation Form

The Teacher Evaluation Form (TEF) was developed to measure the effects of several of the experimental variables on the expectations of teachers towards their pupils. The TEF included a variety of evaluative items, five of which were analyzed for this study. The five items were

designed to assess teachers' predictions of a student's (a) creative ability (b) level of intellectual ability, (c) vocational training ultimately obtained, (d) educational grouping or placement, and (e) quality of teacher-student interaction.

The participating teacher was asked to indicate on a scale of from 1 (indicating a low degree on the attribute) to 6 (indicating a high degree on the attribute) his prediction of the child's creative ability, intelligence, vocational training, and educational grouping. Using a reversed six point scale (1 indicating supportiveness and 6 indicating lack of supportiveness), the teacher-participants were asked to predict the quality of the teacher-student interaction for the child and his classroom teacher.

Procedure. The teacher-participants were mailed a cumulative folder containing a picture of a boy or a girl of either high or low physical attractiveness, whose general ability indicated either deficiencies or lack of deficiencies, and who had maintained an above average level of academic achievement for the first three years of school. In addition, these folders contained information about the home background of the child. The teachers were asked to use the TEF to make their predictions or judgments concerning that child. These predictions have been defined for purposes of this study as the "teacher expectancy set."

The following letter of introduction was mailed to each of the teachers to describe the purpose of the study:

The controversy concerning the use of cumulative folder materials has been an issue that remains unresolved. This project is to be one of many research projects attempting to examine the usefulness of cumulative folder data. It is hoped that a systematic program will aid our understanding of the educational usefulness of cumulative folder materials. Please read the Cumulative Folder material and then complete the Teacher Evaluation Form. Your responses will be kept in complete confidence. Upon completion please place the material in the stamped envelope and return to us. Thank you.

Results

The study utilized a 2 (Sex of Teacher) x 2 (Sex of Child) x 2 (Level of Physical Attractiveness) x 2 (Folder Statement on the Home) x 2 (Folder Statement on the Child) factorial design with all factors completely crossed. Separate unequal cell frequencies, univariate analysis of variance were computed for each of the five dependent measures: teacher's predictions of creative ability, level of intelligence, level of attainable vocational training, educational grouping, and quality of teacher communication. A w^2 was calculated for each experimental term to estimate the proportion of variation attributable to that term. An arbitrary decision was made to interpret only those significant F tests in each of the five models reported in this study which accounted for 2% or more of the total variation for each dependent measure (see Table 1). This additional step was useful in ensuring that all significant F -ratios which were interpreted would contribute to a meaningful portion of the total variance (i.e., meaningful portion was defined as 2% for this study).

Attractiveness of child.

The child's level of attractiveness had substantial effects on teachers' expectations for children's academic and educational success. Attractive

TABLE 1
ANALYSIS OF VARIANCE SUMMARIES OF SIGNIFICANT FACTORS FOR
EACH OF THE FIVE DEPENDENT VARIABLES

		Sex of Teacher	Sex of Child	Level of Attractive- ness	Folder Statement on Home	Folder Statement on Child	Error
df		1	1	1	1	1	458
Creativity	MS		12.83	12.60	94.36	12.21	.71
	F		18.03*	17.71*	132.64*	17.03*	
	w ²		.023	.024	.176	.022	
Intelligence	MS		9.04	61.37	129.27		.59
	F		15.24*	103.50*	217.99*		
	w ²		.017	.116	.245		
Vocational Training	MS			336.16	380.66		1.12
	F			300.04*	339.76*		
	w ²			.255	.289		
Educational Training	MS			39.06	200.80		.41
	F			95.42*	490.50*		
	w ²			.082	.421		
Teacher Communication	MS	11.62			196.71		.35
	F	33.10*			560.56*		
	w ²	.028			.482		

* $p < .01$

children were viewed as being more creative, intelligent, educationally advanced, and expected to receive higher levels of training than unattractive youth. However, respondents did not feel attractiveness of the child would affect teacher-student communications. (Table 2 contains mean comparisons for all dependent variables.)

Child's reported ability.

Expectations for children whose general abilities were described unfavorably in the cumulative folder were viewed by teachers as being more likely to be creative than children who were described by favorable statements. However, teachers were not found to hold differential expectations for children based upon this information for the remaining dependent measures with the exception of one higher-order interaction. Graphical representations of the interaction between the three factors of Sex of Child, Level of Attractiveness, and Folder Statement on the Child's Ability are presented in Figure 1. Simple effects analysis of the B x C x E interaction revealed that teachers predicted that females who are low in physical attractiveness were viewed as more creative when the description of their general ability was unfavorable than when it was favorable ($F = 3.95$, $df = 1,458$, $p < .05$). No other significant differences were found among the groups in this interaction.

Family background.

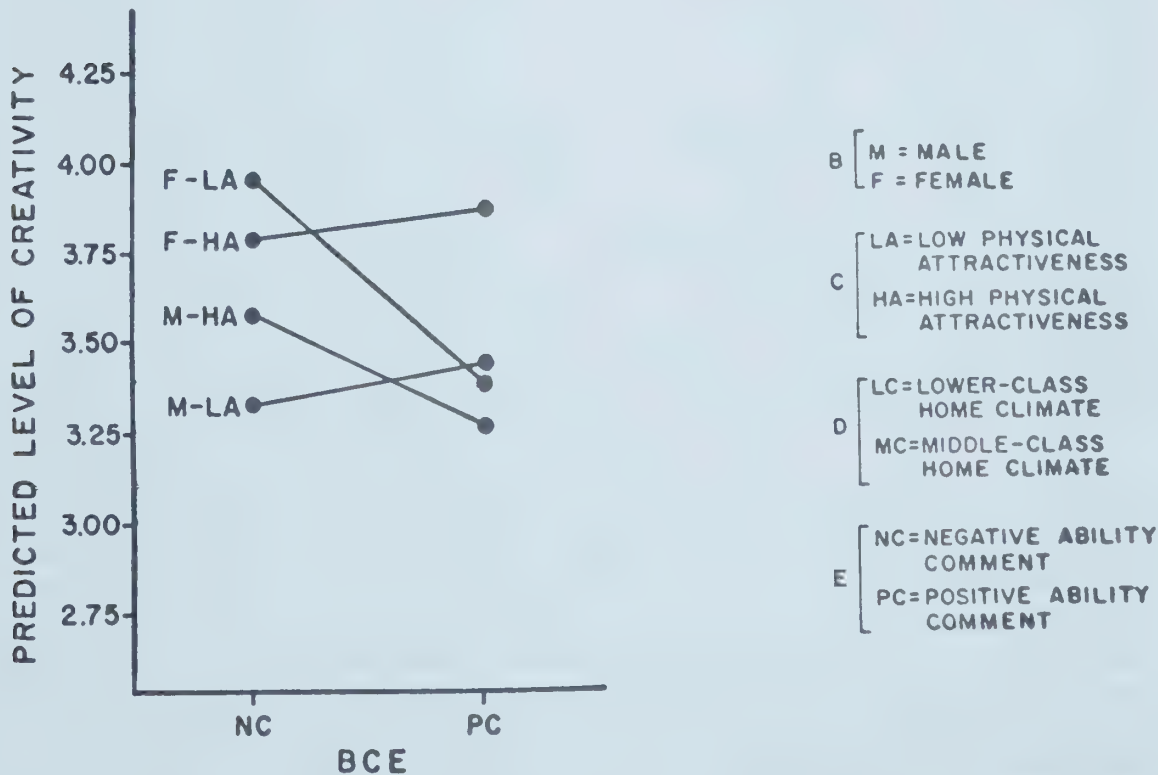
The statement about the child's home life had the greatest single effect upon teachers' expectation sets for children's academic success. Those children who were described in their folders as living in middle-class home climates were predicted to be more creative, brighter, more likely to obtain

TABLE 2
MEAN SCORES ON ALL DEPENDENT VARIABLES

	Sex of Teacher		Sex of Child		Level of Attractiveness		Folder Statement on Home		Folder Statement on Child	
	Male	Female	Boy	Girl	Low	High	LC	MC	Neg.	Pos.
Creativity	3.56	3.54	3.38	3.74*	3.48	3.62*	3.11	3.99*	3.64	3.47*
IQ	2.69	2.80	2.60	2.91*	2.42	3.08*	2.25	3.25*	2.78	2.72
Vocational Training	2.78	2.65	2.62	2.82	1.93	3.51*	1.86	3.58*	2.70	2.73
Educational Grouping	3.81	2.85	2.76	2.91	2.59	3.07*	2.20	3.46*	2.86	2.81
Teacher Communication ¹	2.06	1.82*	1.99	1.88	1.98	1.89	2.57	1.30*	1.93	1.95

* $p < .01$
¹ This measure is counter-weighted, low scores indicate high support, etc.

FIGURE 1
INTERACTION OF THE THREE FACTORS OF SEX OF CHILD, LEVEL OF ATTRACTIVENESS, AND FOLDER STATEMENT ON THE CHILD



higher levels of vocational training, and to be placed in higher educational groups than were children who were described as living in a lower-class home climate. Furthermore, children from lower-class home climates were predicted to receive less supportive interactions from their teachers than were children from middle-class backgrounds.

Sex of teacher and sex of child.

Few sex related differences were found in this study. Male and females teachers were found to report significant differences on one measure only. Male teachers predicted less supportive teacher interaction than did female teachers. Although there is no way to account for this difference by the data, one could speculate that this difference may be due to differences in the degree of nurturance that male and female teachers hold for their students. In addition, two significant differences were found in teachers' predictions of boys' and girls' perceived characteristics. Girls were viewed as more creative and intelligent than boys.

Discussion

The basic design of this research consisted of teachers responding to cumulative folder information where the child's academic grades were held constant for all children; however, the child's sex, attractiveness, home background, and former teacher statement of the child's ability were systematically altered. Therefore, teachers' judgment of children's abilities were selectively limited to four independent characteristics which were manipulated in the cumulative folder information. Hence, teachers in this study were charged with the task of predicting children's expected academic success given certain information about the children. Teachers were found to hold differential expectations for children based upon the child's sex, attractiveness, family background, and ability. The findings of this study provide corroborating support for results from a longitudinal naturalistic-observation study (Rist, 1970) which found that teachers developed expectations toward their pupils through a series of subjective evaluations of attributes and characteristics of their students. In the same study it was observed that teachers possessed a roughly constructed image of the "ideal type" of student. This image is apparently contrasted and compared with the characteristic of the student under consideration in evaluating the expectancy of success for that child. Furthermore, these characteristics appeared to be primarily a function of the student's social class. Classroom research summarized by Brophy and Good (1974) also confirms the assumption that teachers prefer cooperative, attentive, mature, compliant, achieving students, characteristics associated with middle-class membership. This investigation provides additional support for the assumption that the formation of teachers' expectations for children is influenced by social class information. Such a finding might imply that teachers view family background information in one of several ways. Perhaps teachers see social class characteristics as predictive of the likelihood of the child's development of "need for achievement" which would serve as a self-motivating force leading to academic success. Another alternative might be that teachers see social class information as being predictive of the motivating forces that would direct the child through family encouragement and support. Yet a third possibility might be that children from lower-class home backgrounds might not behave in the kind of ways that would make themselves endeared and encouraged by their teachers. Thus, the respondents in this investigation might be reflecting certain social realities of schooling in that teachers, who are by and large

middle-class in their values, might not enjoy teaching children from lower-class social strata.

An examination of Table 1 revealed that the estimated experimental variance attributed to the social class climate of the child's home (Folder Statement on the Home) was greater than for any other factor in each of the five dependent measures. In fact, the estimated experimental variance (w^2) attributed to this social class type variable is greater for this factor than any other on all five dependent measures of teacher's predictions or impressions. These findings support Goodwin and Sanders' (1969) evidence that teachers felt that socioeconomic status was the most important variable predictive of classroom success. These results suggest that statements made by a child's former teacher may have strong influential effects on the next teacher's expectations and perhaps interaction with that child, particularly if such a statement consists of information about the child's home and social class background.

Further confirmation of Clifford and Walster's (1973) work was also found in this study. On the four dependent measures of predicted degree of creativity, level of intelligence, level of attainable training, and educational grouping, teachers rated the physically attractive children significantly and consistently higher than the low attractive children. These results provide further evidence of a physical attractiveness influence and suggest that teachers hold different expectations for physically attractive children which may influence their interactions with these children. This statement appears all the more relevant when one considers prior research which has demonstrated that physical attractiveness of the child has influential effects upon teacher-student interactions (Dion, 1972, 1974; Adams & Cohen, 1974). Furthermore, Good (1972), in an investigation of teacher attitudes, found a small but positive correlation between physical attractiveness of the student and holding the perception by teachers as being the "best known" students. The developmental consequence for special attention and treatment by socialization agents due to degree of physical attractiveness has not received much attention in the research literature. However, several recent studies suggest that differential personality characteristics might develop as the result of varying socialization experiences, with attractive individuals developing prosocial characteristics (Lerner & Karabenick, 1974; Adams, 1975) while unattractive individuals develop antisocial dispositions (Krebs & Adinolfi, 1975; Cavior & Howard, 1973).

Another important consideration concerning the physical attractiveness variable should be noted. Brophy and Good (1974) have proposed that individual differences between teachers may result in certain teachers reacting in a more favorable manner toward certain characteristics of students in their classroom. One specific comparison these researchers propose as being meaningful is that of apprentice or student teacher and master teacher. Furthermore, it could be contended that beginning teachers might be more influenced than master teachers by characteristics of the child since they have not had the experience necessary to sort out reliable versus unreliable characteristics predictive of classroom success. However, the present study found that experienced teachers (with an average of 5 years of teaching experience) were strongly affected in their judgment of children's ability by a physical characteristic of beauty or lack thereof. This

further suggests that physical attractiveness is an additional characteristic of the so called "ideal student."

Although cumulative folder information has obvious merits, education specialists might benefit in behalf of the child from examining the effects of such information on the formation of expectations and attitudes of teachers toward children. Ideally, the next step would be to assess the correlation between varying degrees or types of information and actual teacher-student interactions. The present data collection process was not designed to assess this relationship and it would be unrealistic to assume that teacher expectancy is directly correlated with teacher behavior.

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The significant ACDE interaction has not been discussed due to the unintelligible relation between variables.

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Integrative Complexity: Structure and Correlates

A battery of complexity measures and proposed correlates of complexity was administered to a sample of 100 grade eleven students. Factor analysis of the data revealed 5 factors which were interpreted as factors of intradimensional discrimination, indiscriminately pro-religious response, religious rejection, external dependence and integrative complexity. Although this investigation lent some support to the model of integrative complexity as proposed by Schroder, Driver and Streufert (1967), the findings were perhaps better illustrative of the present lack of well defined measures in this area. (Dr. Stewin is Associate Professor in the Department of Educational Psychology, The University of Alberta.)

During the past decade numerous measures have been developed to assess the individual's level of complexity within the domain of interpersonal perception. Each measure has tended to reflect the approach of a particular researcher to the study of conceptual systems. Since their 1961 publication, Harvey and Hunt appear to have concentrated on training agents (environmental conditions) and behaviors characteristic of each conceptual system level (Harvey, 1967; Harvey, Prather, White & Hoffmeister, 1968; Hunt, 1966; Hunt & Joyce, 1967), whereas Schroder appears to have emphasized information processing in his approach to conceptual systems functioning (Schroder, Driver & Streufert, 1967). These differences have been reflected in instrumentation. Schroder and Streufert (1962) and Harvey (1964, 1965) have utilized semi-projective tests with satisfactory results, however, objective measures have more recently been constructed by Tuckman (1966) and Harvey (1967).

Varying perspectives concerning conceptual systems theory have resulted in the development of multiple classificatory schema as well. Schroder, Driver and Streufert (1967) state that degree of "integrative complexity" is dependent on both the informational dimensions (content) and the integrating rules (structure) which are operational. Although the number of dimensions is not necessarily related to the integrative

complexity of the individual, the probability of more complex combinatorial rules increases with a greater number of available dimensions. Dimensionality is therefore a secondary property of integrative complexity. Schroder et al. (1967) label combinatorial capacity as the "integration index" which increases as one proceeds along the concrete-abstract continuum and have described four levels of integrative structure (low, moderately-low, moderately-high, high).

In theory, level of conceptual system functioning (Harvey, 1967; Harvey, Hunt & Schroder, 1961; Harvey & Ware, 1967) and level of integrative complexity (Schroder, Driver & Streufert, 1967) appear synonymous. However, differences in approach to the classification of individuals by each schema have resulted in differing bases of categorization. Most studies attempting to define a common factor for complexity among various measures have resulted in negative findings (Gardner and Schoen, 1962; Scott, 1962, 1963; Vannoy, 1965). More recently this disparity has been examined by Stewin and Anderson (1974) who concluded that objective measures of complexity based on the framework proposed by Schroder et al. (1967) and on the approach of Harvey (1967) exhibited little or no correlation.

Subsequently, the present study was designed to analyze factorially various theoretically derived measures of conceptual systems functioning and several proposed measures and correlations.

Method

The following battery was administered to a randomly selected sample of 50 male and 50 female grade eleven students ($\bar{CA} = 17.1$):

A. Complexity Measures

- Interpersonal Topical Inventory
- Paragraph Completion Test
- This I Believe Test
- Groups of Nations Test

B. Proposed Complexity Measures

- Inference Test
- Gestalt Transformation Test
- Associations IV Test

C. Correlates of Complexity Measures

- Embedded Figures Test (Form V)
- Religious Orientation Scale
- Internal-External Scale

Each instrument and scoring procedure will be briefly described.

A. Complexity Measures

The Interpersonal Topical Inventory. The Interpersonal Topical Inventory (ITI), devised by Tuckman (1966), consists of 36 forced choice situations. Each response is designated as representative of a particular conceptual systems level. Choice of each response alternate therefore permits the assignation of a complexity level score for that item. Each subject obtains four raw scores, designating the number of choices made pertaining to each system. Intrasystem choices are converted to decile points derived by Tuckman (1966) and conceptual system membership is assigned on the basis

of the maximum decile rank. Subjects obtaining equivalent ranks in multiple systems are unclassifiable.

The Paragraph Completion Test. The Paragraph Completion Test (PCT) consists of a series of sentence stems eliciting projective responses from subjects. Six stems were utilized and scored by the criterion outlined in Schroder et al. (1967, pp. 189-198). Schroder et al. (1967, p. 190) note that stems producing the highest inter-rater reliability are those implying (a) the presence of alternatives, uncertainty or absence of structure, (b) the imposition of external standards, and (c) interpersonal conflict. An inter-rater reliability of .83 was obtained in the present investigation.

The This I Believe Test. The This I Believe Test (TIB), developed by Harvey (1964, 1965) is a projective complexity measure similar in form to the PCT. Stems are of the form "This I believe about. . . ." A four-point conceptual systems classification was employed, as described by Harvey (1966) who notes that global assignation of the individual's mode of conceptual functioning produces greater validity and higher reliability than does item analysis (p. 47). This scoring technique has produced inter-rater reliabilities of .90 and above for various samples (Harvey, *ibid*, p. 46).

The Groups of Nations Test. The Groups of Nations Test (Scott, 1962) consists of a list of 20 nations which the subject is requested to group on as many bases as he can devise. Groups need be neither complementary nor exclusive. A revised scoring system developed by Gardiner (1968, p. 46) presents a considerable divergence from that proposed by Scott (1962), however, the original procedure tends to produce a skewed distribution (Gardiner, 1968, p. 46). In terms of the revised protocol, the subject was assigned both a quantity and a quality score on the basis of simple number of groupings formed and of the complexity of concepts underlying these groupings. (Quality scores ranged from 1 to 3.) Each subject's total score was the simple sum of his quantity and quality scores. The quality score, it should be noted, was limited in range by the decision to assign one quality score to all groups formed on a particular categorical basis, rather than to assign a quality score for each grouping separately.

B. Proposed Complexity Measures

The three proposed complexity measures are sub-tests of the Kit of Reference Tests for Cognitive Factors (French, Ekstrom & Price, 1963). The Inference Test is there described as a measure of syllogistic reasoning, the Gestalt Transformation Test as a measure of semantic redefinition, and the Associations IV Test as a measure of associational fluency.

The Inference Test. The Inference Test employed was an adaptation of one by Berger, Guilford, and Christensen (1957). Subjects were requested to choose between five given conclusions on the basis of the information available in a preceding statement. Correct choices were summed to yield the individual's score. The Inference Test was chosen as a possible measure of complexity as it demands both selection and organization of relevant information to attain the correct solution. As such, it was considered an index of complexity.

The Gestalt Transformation Test. The Gestalt Transformation Test (Guilford, Wilson & Christensen, 1952) has been used as a measure of creativity (Garwood, 1964; Tuckman, 1966). The subject was required to

indicate which of five listed objects would best enable him to successfully complete a specified activity. The subject's score was the sum of his correct choices.

The rationale for the inclusion of this test as a possible measure of complexity was that the cognitively complex person theoretically possesses the ability to spontaneously generate new schemata in an ambiguous situation (Schroder et al., 1967, p. 25) while the conceptually simple person remains bound by the stimulus configuration (*ibid*, p. 23).

The Associations IV Test. The Associations IV Test (Guilford et al., 1952) required the subject to supply a linking word differently related to two given words. A score of 1 was assigned to each correct association; scores were summed to yield the total score. The Associations IV Test was proposed as a complexity measure "... to the extent that a complex person should be less tied to a single, fixed association than would a simple person" (Sieber & Lanzetta, 1966, p. 569).

C. Correlates of Complexity Measures

The Embedded Figures Test, Form V. The Embedded Figures Test, Form V (EFT) is a group measure of field dependence, emphasizing memory of forms (Jackson, Messick & Myers, 1964, p. 188). Form V of the EFT consists of 16 pairs of simple and complex figures presented in booklet form. Complex figures, within which the simple figure is to be identified, are presented on the reverse side of the page. The subject was required to identify, by tracing, as many of the embedded figures as possible within ten minutes. Number of correct identifications completed constituted the individual's score.

The Religious Orientation Scale. The Religious Orientation Scale (ROS), devised by Allport and Ross (1967) consists of multiple choice items. Each item has four alternates, choice of which indicates the subject's degree of agreement or disagreement with the item. Choices were assigned values of 1, 2, 4 and 5; unanswered items were assigned a score of 3. Intrinsic responses to items were low in value; extrinsic responses were high. Separate summed scores for the intrinsic and extrinsic subscales were obtained. Medians for both intrinsic and extrinsic scales were obtained and subjects were classified on this basis. Subjects scoring above both medians were termed extrinsic; subjects scoring below both medians were termed intrinsic. A difference (I-E) score was also obtained. Individuals who obtained a difference score of -12 or less (12 points less on the intrinsic than on the extrinsic subscale) were designated as indiscriminately pro-religious (IPR). A score of this magnitude indicates that the individual recorded at least 50 percent more intrinsic choices than would be predicted from his extrinsic choices (Allport & Ross, 1967, p. 438). An indication of frequency of church attendance was also obtained from item 12 of the ROS.

The Internal-External Scale. The Internal-External Scale (I-E) consists of 25 forced choice items, requiring the subject to choose between externally-worded and internally-worded parallel statements. This version of the I-E Scale was given by Rotter (1966, pp. 11-12) and incorporated three filler items to obscure the test intent. The total number of externally-worded alternates chosen constituted the individual's score.

TABLE 1
INTERCORRELATIONS BETWEEN COMPLEXITY MEASURES AND CORRELATES

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gestalt Transformation	1.000												
2. Associations IV	227*	1.000											
3. Inference Test	336	401	1.000										
4. Embedded Figures Test V	174	191	250	1.000									
5. Interpersonal Topical Inventory	012	045	135	-182	1.000								
6. Paragraph Completion Test	038	187	131	-086	167	1.000							
7. This I Believe	142	277	308	114	112	408	1.000						
8. Groups of Nations	141	194	244	143	-055	128	206	1.000					
9. Internal-External Scale	-256	154	062	-191	-022	075	-023	-089	1.000				
10. ROS-Intrinsic Subscale	-022	045	147	-156	-107	-026	015	-081	290	1.000			
11. ROS-Extrinsic Subscale	-085	026	-021	-008	-037	-080	-110	054	094	-207	1.000		
12. ROS Church Attendance	-034	052	132	-208	-010	042	066	-112	070	461	-033	1.000	
13. ROS Indiscriminately Pro-Religious	-024	008	171	037	148	-173	-023	-120	-116	395	474	-057	1.000

* All decimal points omitted except in diagonal.

Analysis and Results

Table 1 contains the intercorrelations among the 13 variables. The data were subjected to a principal axis factor analysis (Harman, 1967). Five eigenvalues greater than one were obtained.

Five factors were then extracted and rotated to simple structure by the varimax method (Harman, 1967). These factors are presented in Table 2.

TABLE 2
ROTATED FACTOR LOADINGS (VARIMAX)

Variables	Factor Loadings					Communality
	I	II	II	IV	V	
1. Gestalt Transformation	401*	-037	143	-641	-075	589
2. Association	758	065	091	088	-041	596
3. Inference Test	697	185	-066	-287	081	613
4. Embedded Figures Test V	375	004	-283	-295	-480	539
5. Interpersonal Topical Inventory	-001	148	-003	-134	756	612
6. Paragraph Completion Test	383	-294	-105	220	581	630
7. This I Believe	598	-154	026	-039	385	532
8. Groups of Nations	489	-160	-295	037	-127	369
9. Internal-External Scale	147	044	236	799	-042	719
10. ROS-Intrinsic Subscale	029	-350	761	212	-164	773
11. ROS-Extrinsic Subscale	026	765	-082	263	-107	673
12. ROS-Church Attendance	-059	007	829	-017	104	702
13. ROS-Indiscriminately Pro-Religious	-009	871	-097	-152	121	805
Sum of Squares	2.131	1.665	1.550	1.432	1.382	8.162
% of Common Variance	26.12	20.40	18.99	17.55	16.94	100.00
% of Total Variance	16.39	12.81	11.92	11.02	10.64	62.78

* All decimal points have been omitted.

Interpretation of the Factors.

Loadings exceeding $\pm .300$ on the rotated factors have been interpreted.

Factor 1

The following tests defined factor 1, which accounted for 26.12 percent of the common variance and 16.39 percent of the total variance.

<i>Test</i>	<i>Loading</i>
Associations IV	.758
Inference	.697
TIB	.598
Groups of Nations	.489
Gestalt Transformation	.401
PCT	.383
EFT	.375

High positive loadings on this factor by three complexity measures and four correlates of complexity suggest that it may be interpreted as a complexity factor. Desirable subject responses on these instruments appear to incorporate both aspects of complex cognitive functioning, dimensionality and integrative ability.

Associations IV, which contributes the highest loading to this factor, is described by French et al. (1963, p. 12) as a measure of associational fluency or the ability to produce words within a restricted area of meaning, as well as the ability to be aware of similarities between these words. Two conceptual abilities appear relevant to success on this task, differentiation (number of associations) and discrimination (associations within the dimension). Performance on the Inference, Gestalt Transformation, and EFT would also appear to rely heavily on discrimination along a given dimension. Groups of Nations, as scored in this study, appears to be primarily a measure of differentiation, a necessary pre-condition of discrimination.

The relevance of this factor to the nature of integrative complexity is noted by Schroder, Driver, and Streufert (1967, pp. 165-184). They state that the abstractness of a structure is dependent on three variables: number of dimensions (differentiation), number of ways of discriminating along a dimension (discrimination), and a complexity of integrative schemata (integration). This factor might best be interpreted as one of intradimensional discrimination.

Factor 2

Factor 2 accounted for 20.40 percent of the common variance and 12.81 percent of the total variance. The following loadings were obtained:

<i>Test</i>	<i>Loading</i>
IPR	.871
Extrinsic ROS	.765
Intrinsic ROS	-.350

High positive loadings on IPR and extrinsic ROS and moderate negative loadings on intrinsic ROS describe this factor. The PCT contributed a loading of -.294, suggesting a tendency toward lower integrative complexity. This factor was interpreted as one of indiscriminately pro-religious thinking. IPR subjects are defined by Allport and Ross (1967, p. 438) as giving approximately 50 percent more intrinsic responses than would be expected from their extrinsic choices. ROS sub-scale loadings indicate this factor receives substantially higher extrinsic ROS than intrinsic ROS loadings, which suggests a primarily extrinsic orientation or religious acquiescence.

In this instance, a significant intrinsic ROS loading was interpreted as indicative of acquiescence rather than true intrinsic religious belief.

This factor would appear to be the religious correlate of low integrative complexity (Schroder et al., 1967) in that lower levels of integrative complexity are characterized by little differentiation, little discrimination, and little integration. The strong tendency toward IPR acquiescence exhibited on factor 2 suggests it may be interpreted as a factor of low religious complexity or of indiscriminately pro-religious response.

Factor 3

Factor 3 was defined by the following loadings, and accounted for 18.99 percent of the common variance and 11.92 percent of the total variance:

<i>Test</i>	<i>Loading</i>
ROS Church Attendance	.829
Intrinsic ROS	.761

This factor was described by rejection of intrinsic ROS (true religious beliefs) and low church attendance. Factor 3 is also identified with low dimensionality (Groups of Nations -.295), field dependence (EFT -.283), and externality (I-E Scale .236). This factor closely resembles that which Gardiner (1968, p. 65) labelled "religious rejection." However, rejection of religious beliefs is not coupled with rejection of extrinsic or pragmatically oriented religious items, which complements the observed tendency toward field dependence and externality.

Harvey (1966, p. 49) notes that both Systems 2 and 4 tend to reject religious beliefs and participation, on differing bases. The factor of religious rejection under consideration appears consistently related to lower conceptual systems functioning and its correlates, rather than higher functioning. The undifferentiated cognitive style associated with field dependence and externality of orientation support this suggestion.

Factor 4

Factor 4, which accounted for 17.55 percent of the common variance and 11.02 percent of the total variance, was defined by the following loadings:

<i>Test</i>	<i>Loading</i>
I-E Scale	.799
Gestalt Transformation	-.641

Factor 4 is primarily described by high external dependence and low creativity in the form of low Gestalt Transformation scores. However, French et al. (1963, p. 35) suggest that success on this task involves flexibility of set as it pertains to the common function of a specified object. Low scores on Gestalt Transformation, in this context, suggest functional fixedness.

Factor 4 is also identified with field dependence (EFT-.295), low deductive reasoning ability (Inference Test -.287), and extrinsic religious orientation (Extrinsic ROS .263; Intrinsic ROS .212).

Factor 4 appears to be primarily a factor of external dependence. Within this battery, no consistent relationship between external dependence and conceptual systems functioning could be observed. Harvey (1966, p. 53) reports that, on a measure of need affiliation "System 3 individuals were the highest, followed by Systems 1, 4 and 2, in that order. . . ." Consequently, lack of unitary complexity measure trend on a factor of external dependence gains support. System 1 functioning (Harvey, 1966, p. 44) is characterized by dependence on authorities, whereas system 3 functioning (*ibid*, p. 45) tends to be associated with pragmatic dependence on, or manipulation of, others. Differing modes of dependency observed in individuals of distinct conceptual systems levels might be expected to produce the factor discribed (Harvey, Hunt, & Schroder, 1961, p. 188).

Factor 5

Factor 5, described below, accounted for 16.94 percent of the common variance and 10.64 percent of the total variance.

Test	Loading
ITI	.756
PCT	.581
EFT	-.480
TIB	.385

Factor 5 is defined by moderate to high positive loadings on three complexity measures and a moderate negative loading on field independence. Comparatively higher loadings on the ITI and PCT than on the TIB suggest that this factor may be more representative of integrative complexity than of differentiation. Moderate negative loadings on the EFT and a negative loading on Groups of Nations (-.127) tend to support the indication that low dimensionality is an attribute of this factor.

Schroder et al. (1967, p. 115) have suggested that a low order relationship between the TIB and PCT is to be expected as the TIB is scored largely on a content basis whereas the PCT is scored on a structural basis. Schroder et al. (1967, p. 114) also suggest that, in a visual recognition situation, more abstract individuals tend to require more time to complete a task and to express more uncertainty regarding their solution than do more concrete individuals.

In an ambiguous situation such as the EFT offers, the more complex individual produces many more integrations of the information given and more carefully examines each possible solution. The less complex individual, conversely, tends to structure the stimulus field and, in so doing, reduce the ambiguity presented. Poorer levels of performance on the EFT associated with greater complexity may be reasonably considered as an indice, not of field dependence per se, but of a tendency to admit greater ambiguity in a decision making situation.

Discussion

Factor analysis of the battery identified five factors which appeared psychologically meaningful. These have been interpreted as factors of intradimensional discrimination, indiscriminately pro-religious response, religious rejection, external dependence, and integrative complexity.

Results of this analysis lend some support to Schroder's model of integrative complexity consisting of three components (discrimination, differentiation, integration). However, it is suggested that further research into conceptual systems functioning must closely examine the available instruments. Wiggins (1968), in his review of research in the area, has strongly suggested that the factor analytic technique, rather than the "one-shot" investigation, appears the most advantageous approach in applying presently available instruments to determining the nature of the complexity variable. As noted earlier, little commonality has been observed when various measures of complexity have been jointly administered, implying that this construct may be domain specific rather than being a global trait. An efficacious approach to the problem of classification might encompass the administration of a battery of complexity and conceptual systems measures and the derivation of a multidimensional scoring system to effect systems classification.

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Locus of Control and its Relationship to Moral Development

This research attempted to explore the relationships between Rotter's Locus of Control Scale and Kohlberg's Stages of Moral Development. Forty grade twelve subjects were randomly selected and given Rotter's I-E Scale and nine of Kohlberg's protocols. A one-way analysis of variance indicated no statistically significant relationships between locus of control and moral development. This raised questions as to the theoretical basis of both scales. In addition, previous research had indicated that more internal members of society were needed. In the light of previous evidence and the present study, the authors contend that what society needs is not more alert, skillful, achievement-oriented internals, but more people capable of higher moral judgment. (Dr. Boersma is a Professor of Educational Psychology, and Dr. Janzen is an Associate Professor of Educational Psychology, at the University of Alberta.)

In 1966, Julian B. Rotter wrote:

The effects of reinforcement of preceding behavior depend in part on whether the person perceives the reward as contingent on his own behavior or independent of it. Acquisition and performance differ in situations perceived as determined by skill versus chance. Persons may also differ in generalized expectancies for internal versus external control of reinforcement (p. 409).

Rotter's internal-external locus of control construct has been investigated in two primary ways. One procedure sets up an experimental situation in which the subject is reinforced for performing a task. The reinforcement here is designed to appear to the subject as either contingent upon his actions (internal locus of control) or as not contingent upon his actions (external locus of control).

An example of this procedure is reported by Phares (1971). Phares used color matching as an ambiguous task and instructed half of the subjects that the task was based on luck and the other half that the task was based

on skill. After each task the subjects placed bets on how many colored disks they had correctly matched. A fixed order of partial reinforcement was used for both groups; results were as hypothesized. Subjects who, after reinforcement, were told that performance was due to their skill made significantly higher bets than subjects who were told that the task was due to chance. Conversely, subjects who failed to obtain reinforcement and who were told that their performance was due to skill made significantly lower bets than subjects who were told that the task was due to chance. From this study and others, Rotter (1966) concluded that people perform differently, according to whether they perceive reinforcement as being contingent on their skill or as being dependent on chance.

The second way in which Rotter's construct has been studied is to measure a person's internal-external orientation using a 29-item forced choice scale developed by Rotter (1966). Rotter's Internality-Externality (I-E) Scale is based on the premise that people have relatively stable tendencies to view their satisfactions in life as being either under their own control or under the control of some outside force.

In experiments using Rotter's scale, subjects are typically divided in internal and external groups. The median of the sample distribution or the top and bottom thirds are usually taken as the division point for the two groups. Thus, what is internal in one sample may not necessarily be internal in another sample. Such groups are then often compared on some other variable(s) to see if there are any significant relationships between sets of variables.

Results to date have been mixed. Early studies tend to emphasize the positive nature of internality and the negative nature of externality (Janzen & Beeken, 1973). In line with these findings, Rotter (1966) states that internals, as compared to externals, are more alert to their environment for uses which will provide information for the future, take steps to improve their environmental conditions, place greater value on skill and achievement, and are resistant to subtle manipulation. Internals are also described (Rotter, 1966, 1971) as surer of themselves, confident that they can control themselves and their destinies, better educated, more readily able to quit smoking, and richer. On the other hand, externals are described as feeling they are controlled by powerful others, docile and suspicious.

Not all the research, however, has borne out suppositions concerning the positive nature of internality. For example, Battle and Rotter (1963) found that among lower class black children, the more intelligent tended to be more external. DuCette and Wolk (1972) repeated Battle and Rotter's study and reported similar results. Efram (1964) found that among high school students the tendency to repress failures was significantly related to internality. In another study, Janzen, Beeken and Hritzuk (1973) reported that internal teachers were less likely to endorse student autonomy than external teachers. In summarizing the literature to date, Janzen and Beeken (1973) concluded that

it certainly is possible to contend that an external locus of control has positive aspects. These would include a more liberating attitude to interpersonal (and other) relationships, greater tolerance of chaotic and unpredictable situations, a more realistic appraisal of the nature of what influences us, and a less overt desire for power. (p. 301)

Thus, there appear to be two opposing evaluative interpretations regarding merits of being internal; that of Rotter who feels the internality is a positive facet which should be strived for, and that of Janzen and Beeken who feel that externality may also have positive qualities. In light of this controversy it was felt that further study into the nature of Rotter's internality-externality construct was needed, especially in terms of areas hitherto not studied. One of these areas is moral development.

Several studies have suggested possible positive relationship between internality and moral development. For example, Penk (1969) found that children employing verbally mature abstractions tended to be more internal. In line with this, Kohlberg (1971a, 1971b, 1971c) has surmised that ability to make verbally mature abstractions facilitates the obtaining of higher levels of moral development. In another study, Adams-Webber (1969) found that internals had significantly more internalized moral sanctions, which might be interpreted to mean that internals have a more highly developed sense of "right" and "wrong" than do externals. Adams-Webber went on to further suggest that individuals should strive for internalized moral sanctions. Expanding this line of reasoning, if one thinks of great religious leaders or even people that they consider highly moral, it would probably be reasonable to suggest that such people are more resistant to manipulation, and more in control of themselves and their environment, than are people considered less moral. On the other hand, it would be hard to imagine persons functioning at higher levels of morality who were docile, suspicious, and feeling controlled by powerful others. Accordingly, one would expect to find highly moral individuals operating at a high level of internality on Rotter's scale.

The present investigation will address the above supposition by investigating the relationship between Rotter's (1966) Internality-Externality Scale and Kohlberg's (1971) Morality Scale. Specifically, it will address the question of whether Rotter's internal individual will be functioning at a higher level of Kohlberg's stages of morality than the external individual. This question is particularly relevant in light of Rotter's (1966, 1971) and Stephens and Delys' (1971) claim that society needs more internal minded members.

Kohlberg's scale was chosen because its description of individuals functioning at the upper levels of his moral stages seems to agree with the description by Rotter and other researchers (Penk, 1969; Julian, Lichtman & Ryckman, 1968; Adams-Webber, 1969) of internally controlled individuals. For example, Rotter's description of the internal locus-of-control person correlates with Kohlberg's assertion (1970) that there is increasing use of verbally mature abstractions, internalized decisions, higher levels of abstract reasoning and decision making, on the basis of self-chosen ethical principles at high stages of moral development. Conversely, individuals functioning at Kohlberg's lower stages of moral development are described as being punishment and obedience oriented, unquestioning towards power (external sources), and maintaining the expectations of others. Rotter's externally controlled person is also seen as being manipulated by the expectations of others and making judgments based on the basis of external contingencies. Thus, it seems logical to assume that there will be a positive

relationship between the two scales with internal individuals obtaining higher morality scores, and external individuals lower morality scores.

Method

Two samples of twenty high school students were tested. The initial sample (Sample A), consisted of 12 girls and 8 boys whose mean age was 16.8 years. All were attending a grade 11 psychology class. A second sample was used to check the results on Sample A. This second group (Sample B) consisted of 11 girls and 9 boys whose mean age was 17.2 years. These students were attending a grade 12 mathematics class. Both samples came from middle socioeconomic regions of the city of Edmonton. Sample A came from the separate schools, Sample B came from the public schools. All subjects were given the Rotter I-E Scale (1966) and the Kohlberg Moral Development Scale (1971a) with nine of Kohlberg's moral dilemmas being evaluated. Kohlberg protocols were marked by two experienced judges. Extent of inter-rater agreement was 85%, thus indicating fairly high agreement between judges' ratings. The data were analyzed by means of a one-way analysis of variance designs with I-E scores being the dependent variable, and Kohlberg stages the independent variable.

In both samples, two scores were obtained from each student. One score was a Rotter I-E number which could vary between 1 and 29. The higher this score the more internal the individual or conversely, the lower this score the more external the individual. The other was the Kohlberg stage score. These stages vary theoretically from 1 to 6. However, of the population studied, no individual obtained a stage 1 or 6 level of moral reasoning.

Results

This study had as its main postulate the supposition that those who score high on Rotter's I-E Scale are using a type of moral reasoning that would be found at conventional or post-conventional levels of moral development as measured by Kohlberg's scale.

Sample A

Table 1 shows the relationship between Rotter's I-E scores and Kohlberg's stages for this sample of 12 girls and 8 boys. The Rotter I-E scores are listed in the columns under their respective Kohlberg stages. For example, the number 5 under Kohlberg stage 2 represents an individual who scored 5 on the Rotter scale and who fell into the second stage of moral reasoning as measured by the Kohlberg scale. It is interesting to note here that 50% of the I-E scores fell at stage 3, and that cases of upper levels of moral development were infrequent. Also, there appears to be no obvious relationship between these two scales.

Table 2 presents the one-way analysis of variance on this data. A chi-square test for homogeneity of variance revealed that variability of scores between columns did not differ from chance. From Table 2 it can be seen that there was no statistically significant relationship in the first sample between an individual's score on Rotter's I-E scale and his stage of moral development on Kohlberg's scale. In an attempt to see if this finding could be replicated, Sample B was run.

TABLE 1
RELATIONSHIP BETWEEN ROTTER'S INTERNAL SCORES AND KOHLBERG'S STAGES FOR SAMPLE A

	Kohlberg Stage					
	1	2	3	4	5	6
Rotter "Internal" Score (Listed under Kohlberg Stages)		5	6	10	5	
		11	8	11	15	
		11	9	15		
		13	9			
		14	11			
			15			
			15			
			16			
			16			
			16			
			16			

TABLE 2
ONE-WAY ANALYSIS OF VARIANCE FOR ROTTER INTERNAL SCORES BETWEEN DIFFERENT KOHLBERG STAGES FOR SAMPLE A

Source of Variation	SS	MS	DF	F	p
Group	11.25	3.75	3	0.24	0.867
Error	249.7	15.61	16		
Total	260.95	19.36	19		

p not significant at .05 level.

Sample B

The relationship between Rotter's I-E scores and Kohlberg's stages for Sample B, 11 girls and 9 boys, is presented in Table 3. Again, 50% of the subjects fell within the stage 3 classification. There is no apparent relationship between these variables. A chi-square test of variances between distributions revealed that the homogeneity of variance assumption could be met. Consequently, a one-way analysis of variance was also run on this sample. Table 4 presents these data, from which it can be seen that there was no statistically significant effect. Thus, it would appear that there is no significant relationship in the second sample between an individual's score on Rotter's I-E scale and his score on Kohlberg's scale. Concomitantly, these findings are in agreement with those obtained in Sample A.

Discussion

In spite of having samples from different grade levels and from different schools, the results were the same: there were no significant relationships

TABLE 3
RELATIONSHIP BETWEEN ROTTER'S INTERNAL SCORES AND KOHLBERG'S STAGES FOR SAMPLE B

	Kohlberg Stage					
	1	2	3	4	5	6
Rotter "Internal" Score (Listed under Kohlberg Stages)		9	10	14		
		13	18	10		
		12	8	12		
		14	19			
		10	11			
		6	15			
		15	8			
			10			
			15			
			17			

TABLE 4
ONE-WAY ANALYSIS OF VARIANCE FOR ROTTER INTERNAL SCORES BETWEEN DIFFERENT KOHLBERG STAGES FOR SAMPLE B

Source of Variation	SS	MS	DF	F	p
Group	13.87	6.94	2	0.53	0.60
Error	224.3	13.20	17		
Total	238.17	20.14	19		

p not significant at .05 level

between Rotter's Locus of Control Scale and Kohlberg's stages of moral development.

What implications, then, do these results have for the claims made about Rotter's scale? If the I-E scale measures verbal abstraction, internalized moral sanctions, feelings of control, resistance to manipulation, tolerance, and assessment of forces that influence us, why then is there no relationship with the development of moral judgment as measured by Kohlberg's scale? Correspondingly, if children employing verbally mature abstractions tend to be internal (Penk, 1969) and if, as one proceeds up Kohlberg's scale, the principles used in making judgments become more abstract and ethical, why then is there no relationship between the Rotter and Kohlberg scales? One possible explanation might be that even though Rotter's internal is employing more verbal abstractions, the abstractions are not more ethical. Perhaps the abstractions are merely in the form of higher level rationalizations. If this is the case, internals would not necessarily be concentrated at Kohlberg's higher levels.

The fact that internals had more internalized moral sanctions in the

Adams-Webber study (1969), but were not using significantly higher levels of moral judgment in the present study, might be explained by postulating that individuals using higher levels of moral judgment have no great need for internalized moral sanction, or at least by saying that higher level moral judgment does not require more internalized moral sanctions. It might also be that dogmatism, resistance to manipulation, and feelings of being in control are not relevant to moral judgment as measured by Kohlberg's scale. This in turn would raise the question as to whether a person using stage five or six moral judgment as well as a person using stage one moral judgment, as measured by Kohlberg's scale, could be dogmatic, resistant to manipulation, and have feelings of being in control. Similarly, there might be the possibility that individuals at stage one or stage six in moral judgment could be both docile and suspicious.

Perhaps moral judgment and moral behaviour are not related. It may be that Kohlberg's scale measures only moral judgment whereas Rotter's scale measures personality factors that are highly correlated with behaviour. These questions have yet to be answered.

Consider Janzen and Beeken's (1973) external teacher who respects individual rights and allows his students more autonomy than the internal teacher. How can it be explained that he is not necessarily operating at a higher level of moral judgment, particularly when Kohlberg's higher stages are based on an increased respect for human rights? Perhaps this teacher might be operating at a higher level of moral judgment; however, the counter argument, that the teacher is allowing the students' autonomy through lack of control, is equally possible.

The above discussion has been based on the premise that Kohlberg's and Rotter's scales are valid (i.e., that they are measuring what they purport to measure). It is possible that one or both scales are not valid. Several possible limitations of the Kohlberg scale have already been discussed. In terms of Rotter's scale one could question whether it is measuring a single dimension. If internality-externality is not a stable dimension found on a single continuum, it would be very hard to compare individuals with regard to internality-externality at different points on the scale. As Janzen and Beeken (1973) have pointed out, there is a great danger of applying preconceptions to the design and interpretation of locus of control experiments. In other words, there is a danger of endowing the measure with the intended measured meanings of the concept. The theoretical basis for Rotter's scale still needs investigation.

As such, it may be premature for Rotter (1971) and Stephens and Delys (1971), to claim that society needs more internal individuals. Even if the internal individual has the positive qualities that Rotter (1971) claims, the present writers would argue that what society needs may not be more alert, skillful, achievement oriented, and environmental controlling internals (Rotter, 1966), but more people capable of higher moral judgment. Perhaps, as Janzen and Beeken (1973) note, Rotter's scale might be more useful in the field of learning than in personality. Whether internal or external, as determined by Rotter's scale, people might make highly abstract moral decisions based on previous reinforcement contingencies. Accordingly, these contingencies might give individuals stable patterns of responding to situations as posited by Kohlberg. If this is the case such response patterns

could probably not be classified as more internal or on a higher or lower level of moral abstraction.

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Teaching About Marital Roles—Using Research Findings To Design Teaching Strategies

Previous research indicated that adolescent marital role expectation patterns influence later marital adjustment. Data from a study of the marital role expectations of 107 males and 107 females attending a large Alberta high school are reported. Findings indicated that both men and women were equalitarian in 6 out of 7 marital role subscales. The exceptions were the homemaking role for girls and the employment and support role for boys where scores fell in the traditional range. A problem solving teaching strategy is suggested for marriage education classes to implement generalizations obtained from the empirical research. (Dr. Kieren is the Chairperson of the Division of Family Studies and Professor Badir is Dean of the Faculty of Household Economics, The University of Alberta.)

Marriage education in the schools in Alberta has been cautiously approached by school personnel. As a result, few courses have been developed specifically to assist young people in making one of life's more important choices—selecting a marriage partner.¹ The task for educators is therefore two-fold, gaining acceptance for marriage education as a viable part of the high school curriculum and selecting learning experiencing which allow students direct involvement in the discussion of issues most important to them. This article focuses on the latter task as it relates to teaching about marital roles. It reports the findings from a 1971 study of marital role expectations of high school students in a large Alberta city and outlines teaching strategies which utilize this data.

Marital Role Expectations and Marital Roles

Traditional attitudes toward marriage and the concomitant roles of the partners in that system are being challenged (Bernard, 1970; Bardwick, 1971; Dalhstrom, 1967; Bird, 1970). While there has been increasing

discussion and criticism of the marriage institution (Mead, 1966; Otto, 1970), there is continuing evidence that the expectation of marrying is still quite strong in North America. For example, according to census data in the United States, 92 to 95% of the American population marry at some point in their life (Golenpaul, 1969).

In the family, the roles of husband and father and wife and mother stand out as distinct recurrent patterns of conduct. These roles have two components—performances and expectations. The complementary and reciprocal relationship of role performances and role expectations makes up the social structure of the family.

Through the process of socialization, a person learns the standards and ideals of his group so that roles become a part of his personality. Hill and Becker (1942), Cottrell (1933), and Burgess and Locke (1953) suggested sometime ago that a person's marital role expectations are formed in adolescence, not in the engagement or honeymoon period. These expectations may be realistic or unrealistic, but they remain untested until the person marries or forms an enduring relationship with a person of the opposite sex. Cottrell (1933) and Mangus (1957) have suggested that the incompatibility between role performances and role expectations of the spouses acts as an effective stimulus to early marital adjustment. This fact plus the disarming recognition that more and more young married couples are seeking solutions to their unmet marital expectations in the divorce court has led to an increased concern for marriage education programs as a means of preparing youth to cope with these discontinuities more effectively. Devising programs and effective methods depends on a research base of information about current marital role expectations. This belief stimulated the study reported here.

The Study

While several older studies have examined the marital role expectations of American teenagers (Dunn, 1961; Gould, 1961; Moser, 1961), at the time this study was undertaken, Canadian data was not available.² In addition, the women's movement had provided a stimulus for a new look at marriage and marital roles, a fact which suggested it was a propitious time to assess young people's attitudes toward this subject. The study sought to answer the following questions: To what extent do Canadian adolescents' role expectations reflect a companionship-equalitarian or traditional concept of marital roles? Are there sex differences in these expectations? What relationship do selected personal and family variables have to particular marital role expectations? How do the expectations of Canadian adolescents in 1971 compare with those reported in earlier studies for American adolescents in 1959?

The Research Design

Sample

Five large composite high schools (schools which offer both academic and vocational programs) were selected as the study settings. While school policy prevented drawing a random selection of schools or classes, the school population in all cases was representative of more than one area of the city. A sample of 107 males and 107 females was drawn from required

tenth- and eleventh-grade classes. This group represented all students in ten classes. Respondents ranged in age from fourteen to eighteen years of age with a mean age of 16.8 years for the total group. Eighty-eight percent of the sample was Canadian born. The majority of the students came from families in which there were two or more children in the family. Using Hollingshead's Index of Social Position (1957) to assess the father's occupation, fifty percent of the respondents lived in families categorized as white collar. Three-quarters of the student group were dating at the time of the study.

Instruments

The Dunn Marital Role Expectations Index (1960) was used to measure marital role expectations. This scale consisted of seventy-one items divided into seven sub-scales: (1) care of children; (2) personal characteristics; (3) social participation; (4) homemaking and employment; (5) education; (6) personal characteristics; and (7) authority. The remainder of the questionnaire consisted of a series of fixed answer questions to assess age, ordinal position, dating status, educational aspirations, present relationship with parents, marital aspirations of the respondent, and student assessment of the parent's occupation, marital happiness and authority pattern in marriage.

Results

A total marital role expectation score and seven sub-scale scores were calculated for males and females. Out of a possible 71 points indicating a highly equalitarian view of marital roles, the median score for males was 42.5 compared to 48 for females. The range of scores for males was 10 to 63, 19 to 67 for females. Using Dunn's scoring guide, Table 1 summarizes the distribution of male and female scores in the four categories established by Dunn (1960).

A one-tailed Mann-Whitney test of male and female scores indicated that the difference between male and female scores was statistically significant at $< .05$ with females being more equalitarian ($z = -3.42, p \leq .0003$).

TABLE 1
FREQUENCY AND PERCENTAGE DISTRIBUTION OF MARITAL ROLE
EXPECTATION SCORES FOR MALES AND FEMALES

	Males		Females	
	N	%	N	%
Equalitarian Scores 54-71	12	11.2	23	21.5
Moderately Equalitarian Scores 36-53	68	63.6	74	69.2
Moderately Traditional Scores 19-35	25	23.3	10	9.3
Traditional Scores 0-18	2	1.9	0	0.0
Total	107	100.0	107	100.0

Subscale Analysis

Because earlier research related to marital role expectations had suggested that marital role expectations were multidimensional rather than unidimensional, the subscales were analyzed separately. Using a dichotomous split, scores above the median were considered equalitarian and those including and below the median, traditional. Male and female scores were analyzed separately. Table 2 summarizes the percentages of males and females scoring equalitarian on the seven subscales.

TABLE 2
SUBSCALE PERCENTAGES OF MALES AND FEMALES WHOSE SCORES
WERE CLASSIFIED EQUALITARIAN

	Males	Females
Authority	56	72*
Homemaking	48	38
Child Care	78	93*
Personal Characteristics	69	79*
Social Participation	51	59
Education	48	58
Employment and Support	28	51*

* On these subscales, a two-tailed z test of proportions was significant at $<.05$ (Walker & Lev, 1953, p. 77).

One may note that over half of both male and female scores fell into the equalitarian category on authority, child care, personal characteristics, social participation, and employment and support subscales. Over half of the female respondents' scores were also viewed as equalitarian on the education subscale. On all subscales except homemaking, the percentage of females scoring equalitarian was higher than that of males. Thus the hypothesis was supported that females' marital role expectations scores are more equalitarian (and therefore higher) than males' scores on these scales. Using a one-tailed z test of proportions, the hypothesis was supported at the .05 level of confidence for the authority ($z=2.28$, $p\leq .01$), care of children ($z = 3.31$, $p \leq .001$), employment and support ($z = 3.1$, $p\leq .001$) and personal characteristics subscales ($z = 1.7$, $p\leq .04$).

Marital Role Expectations and Personal and Family Variables

Chi-square tests were conducted to assess the relationship between marital role expectation scores and selected personal variables. Hypotheses stating that age, dating status, and future expectation to marry were related to marital role expectation scores were tested. These variables were selected to test whether or not a developmental or experience factor might be associated with equalitarianism or traditionalism in marital roles. Each of the three personal variables were cross tabulated with marital role expectations scores for males and females separately. None of the tests run were significant at the .05 level for either males or females.

Because social learning theory suggests that modeling behaviour serves as one influence in the acquisition of various adult roles, several familial variables were tested with marital role expectation scores. Mother's working status and the respondent's assessment of authority patterns in the parents' marriage constituted the two family variables tested. It was believed that mother's employment would be associated with more equalitarian scores, as would an assessment of equality in the parents' marriage. Neither of the chi-square tests run were statistically significant.

Discussion

When this study was undertaken, there was curiosity about the differences that might be found between the responses of Canadian adolescents in 1971 and American adolescents in 1959. There is the subtle, if unproven, sociological assumption that Canadians are more conservative than Americans and that western prairie Canadians might reflect strong conservative values relative to marital roles. In addition, it was anticipated that the changes which have taken place in women's roles over the past decade might perhaps be reflected in the data.

The present study reports results that are strikingly consistent with both Dunn's (1960) findings over ten years earlier and Hobart's more recent findings for older youth (1972). Both male and female Canadian adolescents have marital role expectations that are generally equalitarian although females' scores are significantly more so. Looking more closely, sex differences also occur in specific areas of marital interaction. On all subscales except that of homemaking, the percentage of females categorized as equalitarian was higher than that of males. On the authority, care of children, and employment and support sub-scales, these differences were statistically significant at the .05 level.

Given the facilitating factors of increased work participation of women, and societal support for sharing homemaking tasks, one can only speculate as to the reasons for so little change in the marital role expectations of North American adolescents. For females in particular, it is contradictory that while married women are increasingly acquiring jobs outside the home, adolescent females hold fast to marital role expectations that are viewed as traditional in the homemaking area. This kind of marital role expectation, if brought to fruition in marital role performance, carries the seeds of marital role conflict, a condition of contemporary women which has been much noted in the literature (Podell, 1966; Komarovsky, 1946; Arnott & Bengston, 1970; and Bardwick & Douvan, 1971). It would appear that women themselves are clinging to a sex differentiated assignment of household tasks. It is possible, as Hobart (1972) has suggested, that homemaking is seen by women as an area of competence which is exclusively female and that their success as persons is closely bound to others' perceptions of their competence in this role. A young girl is not as likely to see this area as one into which she can allow men, or within which she can cope with competition. It becomes necessary, then, to see these competencies as exclusively feminine, thereby producing a traditional (non-sharing) score on attitudes to sharing or equalitarian participation in homemaking tasks. While one would logically question the relevance of items which are over ten years old, a pretest of the instrument indicated that the seven-subscales

presented were, in fact, reflective of present day marital role behaviour, except that sexual roles were omitted. To compensate for this omission, a separate set of questions dealing with sexual roles in marriage were developed by the authors. Because school policy demanded that these items be used only on an optional basis, they were analyzed separately and eliminated from the data presented in this paper.

Another facet of the socialization of young girls must be examined at this time. Women appear to be socialized to seek fulfillment (self-esteem) through the development of intense and important relationships within the traditional marriage form (Bardwick, 1971). Some of the skills for achieving success are learned very early. Girls quickly learn to relate to the needs and desires of those with whom they are interacting. Adaptability, flexibility, acceptance and non-aggressiveness are characteristically feminine ways of dealing with problems (Bardwick, 1971). These are also characteristics necessary for the perception of marital roles as equalitarian.

Bardwick and Douvan (1971) summarize these arguments as follows:

Success in the traditional tasks is the usual means by which girls achieve feelings of esteem about themselves, confidence and identity. In general they have continued, even as adults, to esteem themselves as they are valued by others; that source of esteem is interpersonal, best earned within the non-competitive, non-aggressive traditional role. (p. 236)

It therefore becomes totally reasonable for girls to express agreement to equalitarian items on a marital roles scale which are considered less applicable to the feminine role, but to be doing so only for highly traditional reasons (because they have been socialized to be adaptable and thus equalitarian). On the other hand, it is also consistent that girls would be very traditional (non-sharing) about the aspects of marital roles which give them their chief source of identity—homemaking.

One possible explanation for finding a difference in the attitudes of young male adolescents to the homemaking area follows similar lines: traditional socializing of boys has been to the acquisition of manipulative, competitive, rational and aggressive skills. Males must see themselves as "thinking and doing" individuals. Young men have been socialized to masculine-type marital responsibilities. Because sharing, adaptability, and dependence are not masculine, it would indeed be strange if young men were to score high on a so-called equalitarian scale. Insofar then, as the traditional items on the Dunn scale coincided with characteristics normally associated with maleness, one would expect male adolescence to produce traditional scores. What was surprising, in both the Dunn study and the present one, was the tendency for males to score equalitarian in the area of household tasks. Most young males are accustomed to seeing their fathers sharing in token areas with the household tasks. Thus to help occasionally with household tasks could be constructed as an acceptable male activity. Performed within the confines of the home on an occasional basis, this sharing probably is not seen as any threat to masculine authority. If the role model provided is an equalitarian one in this area, then the tendency to obtain equalitarian scores in household tasks is not inconsistent with traditional scores on the other scales.

The problem that this data presents to educators is an important one. There is sufficient evidence from studies reported previously about marital

role expectations (Dunn, 1961; Gould, 1961; Hobart, 1972) to indicate that the results reported here support an empirical regularity. Young women's attitudes toward marital roles are decidedly equalitarian with the exception of one area which has always been considered a typically feminine one—carrying out homemaking tasks. This finding suggests several potential consequences for marital interaction. As more women accept the challenge of combining work, home, and family, a traditional view of the household division of labor may create role strain and role overload due to the unrealistic expectations associated with the view. In addition, associating one's personal identity with a specific household function is dangerous in the rapidly changing environment in which we live. The data clearly expose an unrealistic expectation when compared to the role behaviour of husbands and wives today (Nye, 1974).

Designing teaching strategies to respond to this situation calls for a careful analysis of the task. The traditional-equalitarian dichotomy of marital roles should not be placed on a bad-good continuum. Instead, the task is to expose students to a process of attitude clarification. The objectives of this process are to allow students to identify and predict some consequences of their marital role expectations and to test out the effect of shared or conflicting marital role expectations in hypothetical marital problem solving situations.

Identifying one's personal marital role expectations is often a new experience for high school students. The Dunn instrument is a quickly administered and self-scored scale for this purpose. It comprehensively covers marital roles with the exception of sexual roles in marriage. Other methods to allow students to identify personal marital role expectations include the following: a love letter to an imagined fiance stating explicitly what he/she expects from a wife/husband, or devising and using an open-ended interview schedule designed to assess marital role expectations. Films such as *The Three Women Series*, available from the National Film Board of Canada, also provide a good stimulus for a discussion of male and female expectations with regard to specific situations.

The identification of marital role expectations is not enough, however. Students need to test various combinations of husband/wife marital role expectations in situational contexts. A problem solving mode is particularly useful for this process. The problem solving mode for teaching about marital roles is particularly relevant because it allows maximum flexibility in the selection of situations (which is particularly important when some aspects of the roles are changing), it focuses on the notion that seldom is there only one solution to a problem involving human beings, it allows for different values and goals to be explored, and it accentuates the notion of positive goal directed interaction in marital relations.

An example of such a problem solving situation in the employment and support area of marital roles follows:

You are John Hunter, 22 years of age, married to Sue Hunter for little over a year. You have had a job as a computer analyst for a small business firm while Sue finishes her teaching degree. You like your job and are making reasonably good progress. You have an equalitarian view of marital roles. You and Sue have always shared household tasks and before you were married you discussed the fact that both of you wanted to have a career. You were quite supportive of Sue

working to finish her degree so that this goal could be achieved. Now it appears that Sue will be unable to get a job in Alberta but there are several jobs available in British Columbia for teachers in her area. You were quite unprepared for the situation you now find yourself in—you may have to interrupt your own career so that Sue has an opportunity to start hers. The guys at the firm think you are crazy to even consider it.

How would you resolve this situation? Outline both Sue's and John's marital role expectations as you see them. Identify potential conflict and some solutions.

Situations may be specifically written to fit community values and marital patterns or may be obtained from marriage counselling case studies or marriage textbooks using a problem solving orientation (Kieren, Henton, Marotz, 1975). These problem solving situations may be role played or discussed in small groups to vary the format.

Marriage education cannot hope to solve all the complex problems associated with marital conflict and failure but it can hope to make young people more aware of the dynamics and the processes of human interaction. Toward that end, dynamic teaching strategies utilizing empirical evidence in new and creative ways are our hope for creating more satisfying marriages in the future.

¹The Modern Living section of the Alberta Home Economics curriculum initiated in 1974 offers a marriage preparation unit as do portions of the Social Studies and Psychology curricula. The Edmonton Separate School Board began teaching a marriage course in 1975 and the Edmonton Public School Board has, since 1970, included a marriage unit which presently reaches 2,000 students a year.

²Hobart (1972) has subsequently reported a study of the marital role expectations of university-aged youth.

³Available from Family Life Publications, Box 427, Saluda, North Carolina.

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A Comparison of Outcomes in Individual and Group Counseling with Ninth-Grade Girls

A group of 108 ninth-grade girls in a Commercial Secondary School were randomly assigned treatments with a stratified control for counseling readiness (CsR on the ACL) to one of three counselling treatments: (a) group counseled, (b) individually counseled, and (c) non-counseled (control). Pre- and post-treatment measures were taken on Self Concept (Fitts—TSCS) and on School Attitude (Bell—School Inventory). Significant increases in most dimensions were found, both across treatments and between treatment and control. Although no intermodal differences were significant, the group counseled girls showed larger favourable changes in Self-Criticism, Identity, Moral-Ethical Self, Family Self, and Orientation to School. The individually counseled group showed large favourable changes in Total Self Concept, Self Satisfaction, Behaviour, Personal Self, Social Self. It was concluded that group counseling seemed to produce shifts more related to Self-Actualization while individual counseling produced changes more related to Self-Confidence (Esteem orientation). Some implications to counseling practice and for further research are drawn. (Dr. Wearne is Associate Professor and Chairman of Counsellor Education, and Dr. Powell is Assistant Professor, University of Windsor Faculty of Education.)

The value and effectiveness of a comprehensive counseling service for youth has been discussed thoroughly in the professional literature. Mahler (1969) proposes that young people must have help in learning how to better understand themselves, to make decisions and solve problems, and to integrate their own personal growth with the increasing complexity of the seventies. Moreover, Leonard (1971) suggests that most students appreciate professional help in their development and cautions counselors that they are quite possibly in error when they provide counseling only for "problem" students who desire help for a particular purpose at any time.

While there is a great deal of literature supporting the use of counseling,

whether it is with individuals or groups of individuals, there is a paucity of research on the effectiveness of counseling with secondary school students within the normal range of behavior. Most reports on counseling outcomes centre around students experiencing either academic underachievement or disciplinary and social adjustment problems. The present study provides needed information on the outcomes of counseling with the general population of ninth-grade girls.

Significance of the Study

Although it is generally accepted that counseling, whether in an individual or group modality, is important to youth in developing a healthy attitude toward themselves and their surroundings, there is little correspondence between writers on whether one method is superior to another. For example, Fiedler (1950) found that the methods of psychotherapy have about the same level of success depending upon the level of sophistication of the therapist. More recently, Combs and Soper (1963) demonstrated that the perceptual organization of good counselors was significantly more positive than for poor counselors. Fullmer (1971) noted the indications are that something other than the formula creates the forces that change behavior; “. . . if counselors are professionally competent, individual or group counseling should equate on results whenever compared” (p. 199).

Accepting the equality of results, group counseling enables the counselor to make more efficient use of available time. Potentially, a well-organized group-counseling program is more effective than individual counseling because the counselor is able to work with more students longer and more intensively.

Numerous writers (for instance, Clancy, 1967; Gazda, 1968; Krumboltz, 1968; Mahler, 1969) have indicated that group counseling appears to be a more efficient and effective technique than individual counseling, and possibly is a more realistic way of helping students.

The need exists, then, to compare the efficacy of individual and group counseling modalities with secondary school students in the normal range of behavior. Specifically, the purpose of the present study was to compare and measure differences in self-concept and attitude toward school between ninth-grade girls who had received group or individual counseling over a 15-week period and girls who had not been counseled.

Procedures

The pretest-posttest control group design was employed. Gazda and Larsen (1968) report this true-experimental design

. . . describes a model in which equivalent groups, as determined by randomization procedures, are used in the experiment. It incorporates many experimental and statistical variations into its model and offers control for all sources of internal validity; and for some, but not all, sources of external variation. (p. 62)

The Sample

The subjects in this study were 108 ninth-grade girls attending an urban, commercial secondary school. The 108 girls were selected from among 223 students as follows:

1. The 30 male students registered in grade nine were not included.

Havighurst (1965) posits that females and males experience differing developmental tasks and thus require different treatment. Further, the West (1971) study reported the existence of self-disclosure problems between ninth-grade boys and girls. The elimination of boys from the study controlled for this variable.

2. The elimination of 33 female students was required to maintain as closely as possible subjects in the normal range of behavior. Specifically, teachers reported that 22 students were seriously underachieving and/or experiencing emotional difficulties; another 11 girls reported they were recipients of help through a local agency.

3. The Adjective Check List (1965) was administered to all ninth-graders, and the Counseling Readiness (CsR) score obtained. Scores obtained by the remaining 160 girls were randomly distributed to form five regions as indicated in Table 1.

TABLE 1
DISTRIBUTION OF COUNSELING READINESS SCORES

Standard Score Band	Frequency
25 - 39	28
40 - 44	28
45 - 49	56
50 - 54	25
55 - 64	23

From the five regions, 18 students from each of the first, second, fourth, and fifth regions and 36 from the third region were randomly assigned to one of the treatment or control groups. Through the placement of subjects in groups, 18 groups of six students were formed: six groups to be counseled individually; six groups to be group-counseled; and six control, or non-counseled, groups.

4. Additionally, all subjects completed the Tennessee Self Concept Scale (1965) and The School Inventory (1963) before and after the 15-week treatment period.

The Counselors

Each of the three resident counselors in the school was randomly assigned to provide group counseling to two groups (12 subjects), and individual counseling to 12 subjects (two groups). Employing Combs' (1969) procedures, a prestudy evaluation of the counselors indicated each exhibited a positive perceptual organization. The implication of these findings tends to indicate each can be described as an "effective" counselor.

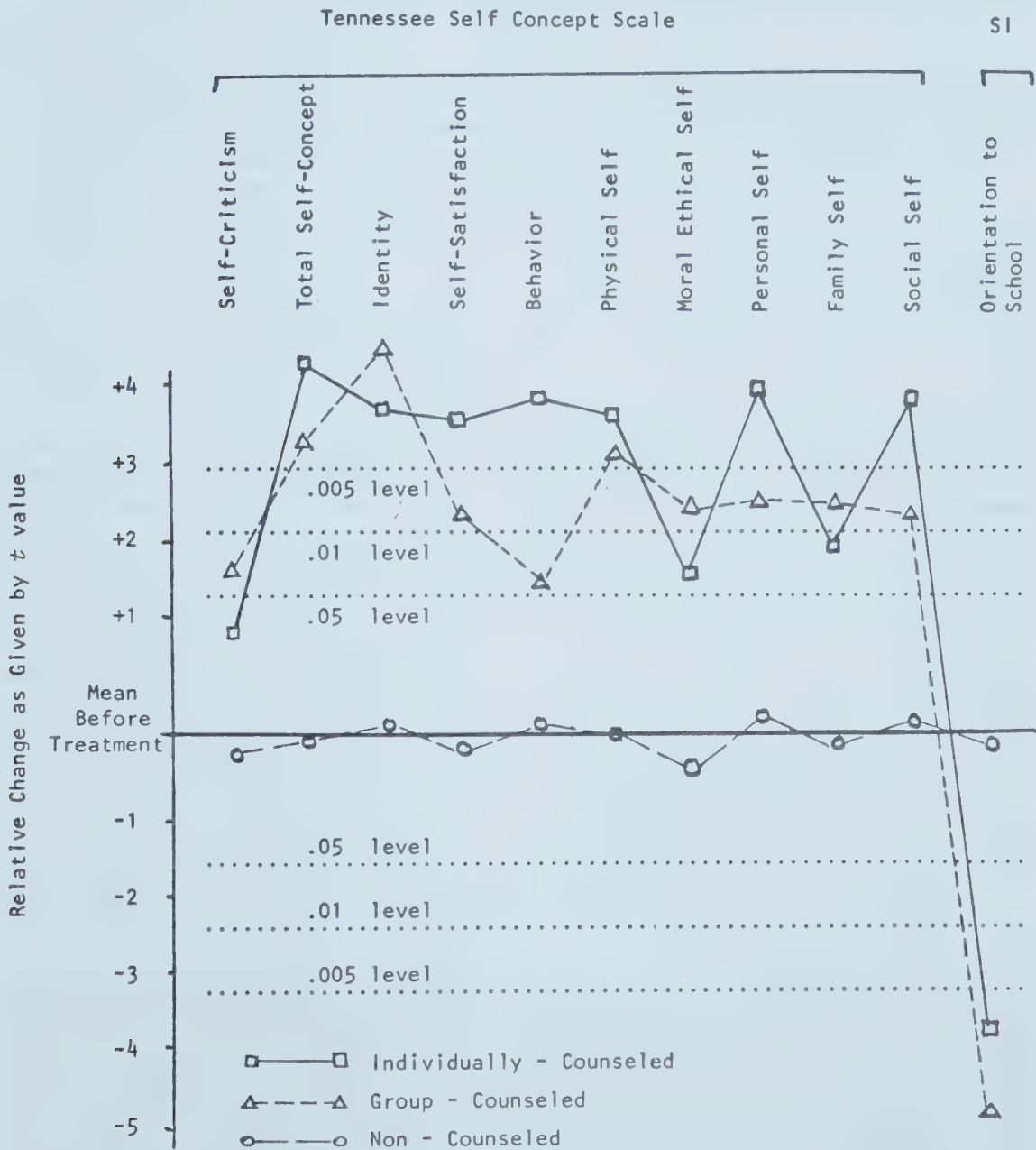
Statistical Procedures

To determine and analyze mean differences in change, analysis of variance (*F* test) was computed within and between groups, before and after the treatment period. In addition, *t* tests were conducted on selected parts of the data.

Results

The effects of the counseling sessions are represented in Figure 1 which displays the corresponding values for students' t for each group with respect to their before and after mean values on each subscore of the Tennessee Self Concept Scale (TSCS) and on the School Inventory (SI).

FIGURE L
GRAPHICAL REPRESENTATION OF t VALUES FOR THE BEFORE-AFTER
WITHIN-GROUP COMPARISONS



Note: Low scores on the School Inventory (Orientation to School) represent high acceptance of the school setting.

It should be noted from Figure 1 that none of the changes for the non-counseled groups were statistically significant. Alternately, only the change

for the Self-criticism subscore for the individually-counseled was not significant.

For the remainder of the comparisons possible, Table 2 gives all of the *t* values obtained along with their relative significance levels. It should be noted from Table 2 that virtually all comparisons with the non-counseled group are significant except for Self-criticism for both groups and Family Self for the group-counseled group.

TABLE 2
SIGNIFICANCE OF COMPARISONS AMONG VARIOUS VARIABLES IN THE STUDY

Scale	Pretest Comparisons			Across Treatment Comparisons			Posttest Comparisons		
	G/C	G/C	I/C	G/C	I/C	N/C	G/C	G/C	I/C
	vs	vs	vs	vs	vs	vs	vs	vs	vs
	N/C	I/C	N/C	G/C	I/C	N/C	N/C	I/C	N/C
Self-Criticism	-1.05	- .09	-1.02	-1.92*	-1.06	.16	1.05	.80	.27
Total self-concept	- .83	- .72	- .15	-3.47***	-4.19***	.08	3.03***	-1.26	4.45***
Identity	-1.55	-1.32	- .33	-4.27***	-3.73***	.01	2.70***	- .75	3.34***
Self satisfaction	- .75	-1.05	.29	-2.40***	-3.52***	.23	2.12*	-1.37	4.52***
Behavior	.10	.51	- .43	-1.83*	-3.66***	.01	2.22*	- .82	3.40***
Physical self	- .10	- .58	.44	-3.43***	-3.59***	.00	3.32*	- .68	4.21***
Moral-ethical self	- .88	- .21	- .48	-2.46**	-2.04*	.53	2.61**	- .76	2.69***
Personal self	- .26	- .39	.10	-2.51**	-3.93***	.22	2.39**	-1.28	3.78***
Family self	-1.14	-1.54	.06	-2.48**	-2.31*	.06	1.11	-1.28	2.69***
Social self	- .23	.26	- .51	-2.41**	-3.68***	.20	1.99*	- .72	2.96***
Orientation to school	1.20	.53	.61	5.00***	4.15***	.10	-2.49**	1.47	-3.49***

* Significant at the .05 level
** Significant at the .01 level
*** Significant at the .005 level

No significant differences were found between the group-counseled and individually-counseled girls.

Finally, it should be noted that the relative sizes of the girls' *t* values for the comparisons between the group-counseled and individually-counseled girls are inconsistent with the relative displacements evident in Figure 1. This inconsistency may be a product of between group differences in the pretest means and variances. These differences were not significant (see Table 2) but may have been large enough to influence this latter result. It is possible that a covariance procedure would have shown some significant differences between individually counseled and group-counseled subjects.

Discussion

It is quite clear that both counseling modalities produced changes in self-concept and orientation to school. Furthermore, no statistically significant

differences were found between the means of the individually- and group-counseled subjects. It is noteworthy, however, that this finding may be a product of the analytical procedures used.

For this reason it would seem valid to speculate about the possible significances of the comparative values shown in Figure 1.

Since all the girls' t values are derived from the same curve (i.e. with 70 degrees of freedom) these values are logically comparable although no direct measure for the significance of these differences exists.

From Figure 1 we find the individually-counseled group higher in their t values on Total Self-concept, Self-satisfaction, Behavior, Physical Self, Personal Self, and Social Self.

The relatively high value on Behavior (which involves self-report) must be considered with caution because this group did not increase significantly in Self-criticism. Aside from this, all gains which are higher than those for the group-counseled girls are in self-oriented aspects of self concept.

The group-counseled girls, alternatively, had higher t values on Self-criticism, Identity, Ethical Self and Orientation to School. If the increase in Self-criticism is influential in the relatively lower self-report on the Behavior scale, then the "going beyond self" or "others" orientation of this combination may be very meaningful.

For both groups the Self-criticism scores are in the healthy mid-range. Also, both groups saw the school as far more appropriate to their needs than previously. If we assume that a self-actualizing person tends to be "going beyond self" oriented and more than usually self-critical, then these observations make considerable sense. The hypothesized highly self-critical nature of self-actualizing people is proposed on the grounds that these people seem to use the results of their input into a situation as feedback for the self-modification of future behavior.

Thus the overall comparisons would suggest that the individually-counseled girls became more self-directing, or, if you wish, more focused upon the enhancement of their own competence. This would suggest a strengthening of their orientation at the Esteem level of Maslow's hierarchy. The group-counseled, on the other hand, would seem to have become more self-actualization oriented. In both cases such individuals would be expected to see the school as much more appropriate to these strengthened needs than previously.

The typical school experience tends to focus upon the study of the opinions and accomplishments of others rather than the development of opinion generation skills and strengthening of personal competence. For this reason, we would expect school to be substantially more relevant to the self-actualizer, than to the esteem oriented person. Parenthetically, we would also expect the esteem oriented person to see such school experiences as substantially more relevant than the socially (affiliation) oriented person. It is not surprising, therefore, to find the group-counseled girls substantially more favorable in their orientation to school experiences than their individually-counseled classmates.

Although the significance data does not support these conclusions, it seems reasonable from the comparison of profile values to propose that the

different counseling procedures had differential effects upon the girls involved. In this sense, we would expect individual counseling to strengthen esteem needs and group counseling to strengthen self-actualization needs. Thus it may be that the nature of experience rather than the level of need is the prime determiner of behavioral outcomes. This observation is not in agreement with Maslow's hypothesized need structure, but supports the learning theorists' position instead, as noted by Sawrey & Telford (1967).

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Teaching Attitudes and Behaviours of Preschool Personnel: Curriculum Variations

A self-administered rating scale was given to 14 preschool teachers employed in seven settings. In addition, the teachers were observed and their teaching behaviours were classified on a schedule which complemented the rating scale. The results indicated that teachers employed in the same settings generally agree with each other about curriculum strategies and behave similarly. the attitudes and behaviours of day care teachers did not relate highly to those of Montessori teachers. However, day care teachers were similar to cooperative nursery personnel both in terms of their expressed attitudes and overt behaviour. (Dr. Rubin is currently Associate Professor of Psychology and Ms. Hansen is a doctoral student in Psychology, both at the University of Waterloo.)

During the 1960s, volume upon volume of preschool educational research was produced in the United States in an effort to outline the importance of early experience in the intellectual and social development of young children (see Evans, 1975 for a review of U.S. research efforts). To a much lesser extent, researchers and educators in Canada have attempted to describe the merits of early childhood education for both disadvantaged and advantaged preschoolers (e.g., Bowen, 1974; Rubin, 1976). In general, the research to date has been of a summative, comparative nature (Messick & Barrows, 1972). Thus, in evaluating programmatic effects, wide use has been made of the classic experimental model in which children attending an innovative programme (experimental group) are compared with a matched sample of children not attending preschool (control group). Comparisons are usually made prior to being introduced to the experimental environment as well as one academic year after. The outcome measures usually consist of IQ or other cognitive or social developmental scores.

One basic weakness with research of this kind rests with the methodological strategy employed. Thus, in comparisons of children who are in an innovative programme with those in a traditional nursery or a

non-treatment control group, the authors report differences in children's performance resulting from curriculum variations between programmes. Unfortunately, in summative research there is rarely more than a cursory, subjective description of what, in fact, happens within the context of each classroom that could possibly have accounted for the reported outcome differences in children's performances.

Although summative, comparative research is important and interesting, a closer look at what happens within the classroom seems necessary to make sense of the findings of such research. Thus, this study was undertaken to discover whether or not theoretical differences in curriculum variation could be ascertained empirically through an examination of teacher attitudes and behaviours. First, the study was concerned with whether or not teachers employed in the same settings could agree with each other concerning expressed optimal educational strategies for preschoolers. Second, it looks at whether or not teachers employed in the same settings behaved similarly with the children in their classes. Third, the relationship of teachers' attitudes and behaviours among a number of settings purporting to derive from the same conceptual viewpoint were studied. Of particular interest was whether or not teachers who worked in different day care centres, on the one hand, and different Montessori schools, on the other hand, shared common beliefs and academic behaviours within each type of programme. Finally, the study discusses the relationship of teachers' curricular attitudes and behaviours among a variety of settings having different conceptual viewpoints (e.g., day care, Montessori, "traditional nurseries," and cooperative centres).

Hypothetically, a "classroom curriculum" exists if teachers within a single school setting express similar beliefs about optimal educational strategies and if they exhibit similar behaviours within the setting. Again, hypothetically, a "theoretical curriculum" exists if teachers employed in settings sharing a single conceptual or theoretical viewpoint express similar attitudes and behaviors. Finally, if curricula evolve from different conceptual frameworks, then teachers employed therein should not share similar curricular beliefs or express similar classroom behaviours.

Method

Subjects

The subjects included 14 female preschool teachers employed in seven different early education settings in Waterloo County, Ontario. These settings included a traditional nursery, a cooperative early education centre, three day care centres, and two Montessori schools. All participants were persons who responded to an initial request for volunteers to take part in an *Association for Early Childhood Education: Ontario* research project. Two full-time teachers were then randomly chosen from each of seven centres. A brief description of each type of preschool setting is presented in Table 1.

Procedure

A questionnaire concerning teachers' curriculum beliefs was mailed to all participants. In addition, all teachers were asked to allow two trained research assistants to visit the classroom to observe their teaching behaviours. The questionnaire and observation scales are described below.

TABLE 1
BRIEF DESCRIPTION OF THE CHARACTERISTICS OF EACH PRESCHOOL SETTING

<i>Day Care:</i>	Physical care oriented; curriculum not based on any discernable developmental theory; stress on learning through play; full day programme.
<i>Cooperative:</i>	Play and social orientation; curriculum not based on any discernable developmental theory; use of parents as teachers and aides; half-day programme.
<i>Traditional:</i>	Social and physical orientation; curriculum not based on any discernable developmental theory (if any theoretical orientation it would be "maturation" based); circle and group games; half-day programme.
<i>Montessori:</i>	Cognitive orientation with often purposeful lack of social orientation; based on developmental principles and theory; structured learning environment; half-day programme.

*Teacher Belief Rating Scale (TBRS)*¹ - The TBRS is an attitude scale designed to assess teachers' beliefs concerning broad curriculum practices (Verma & Peters, 1975). Five curriculum dimensions are represented on the TBRS; these may be summarized as being a belief (1) that children are active vs. passive learners; (2) that children are qualitatively like vs. qualitatively unlike adults; (3) that children learn best through intrinsic motivational vs. extrinsic motivational means; (4) that children learn best when given general types of experience vs. specific training; and (5) that children learn best in a process-oriented vs. product-oriented classroom environment. Each of the 24 TBRS items was characteristic of Likert-type variables with a range of responses varying from "strongly agree" to "strongly disagree". A score of 6 was given for the most highly "flexible" process-oriented answers, whereas a score of 1 was assigned to the most "rigid" product-oriented answer. Typical of the TBRS items was the statement: "Teacher stresses using materials in prescribed ways." A "strongly agree" answer would have been accorded a score of one. All items were taken directly from Verma and Peters (1975).

Teacher Practices Observation Form (TPOF)—The TPOF was developed by Verma and Peters (1975) in order to formulate observable behavioural categories which corresponded to the items on the TBRF. In the present study each teacher was observed for 10-13 one-minute time samples over a single one-hour class period during free play by a female graduate student. Each behaviour category was simply checked if it occurred during any given one-minute interval. In addition, all teacher behaviours were briefly described following each minute of observation.

Since some teachers were observed for more time samples than others, all data were transformed such that the behaviour scores were divided by the number of observation intervals. Thus, for example, if Teacher X received 8 checks for "teacher watches child" over 10 intervals, she would have received a score of .8. If Teacher Y likewise received 8 checks, but over 12 intervals, she would have received a transformed score of .67.

Once again, all categories were taken from Verma and Peters (1975). The behavioural items were subsumed under the following general headings: (a) teacher follows vs. directs; (b) teachers adapts vs. does not adapt to

children’s behavior; (c) intrinsic vs. extrinsic motivation; (d) child discovery vs. teacher training; and (e) teacher stresses process vs. product learning.

Seven behavioural categories were added to the original Verma and Peters (1975) scale. These categories were: (a) teacher helps child; (b) teacher watches child; (c) teacher ignores child; (d) teacher gives physical affection or comfort; (e) teacher gives verbal comfort; and (f) teacher follows child.

The TBRs and TPOF validity and reliability data are found in Verma and Peters (1975).

Results

Teacher Belief Rating Scale

Pearson product-moment correlation coefficients were first calculated between the curriculum *attitudes* of those persons working within the same setting. Thus, a teacher’s responses on the attitude scale were correlated with her colleague’s ratings. The correlations within classrooms are presented in Table 2.

TABLE 2
CORRELATIONS OF TEACHER ATTITUDES (TBRs) AND TEACHER
BEHAVIOURS (TPOF) WITHIN EACH CLASSROOM

School	TBRs <i>r</i>	TPOF <i>r</i>
<u>Day Care</u>		
School A	.49*	.77**
School B	.30	.58*
School C	.70**	.84**
<u>Traditional</u>		
School D	.36	.81**
<u>Cooperative</u>		
School E	.67**	.60*
<u>Montessori</u>		
School F	.53*	.74**
School G	.72**	.79**

* *p* < .01
** *p* < .001

Briefly, the results indicated that in five of the seven classes studied there was significant agreement among the teachers concerning how children should best be taught. The correlations within one day care class and within the traditional nursery school were non-significant.

The data for the three day care centres and two Montessori schools were then considered in an effort to discover whether teachers within any given theoretical framework agreed with each other about curriculum goals, regardless of their place of employment. Thus the day care teacher’s attitudes were intercorrelated as were the attitudes of Montessori teachers. If a separate “classroom curriculum” existed within each class (i.e., if day care

was not a “unitary construct”), then the between teacher correlations presented in Table 3 would not be significant. The correlations between the attitudes of teachers in the day care groups are presented in Table 3. It is noteworthy that only 7 of the 12 possible *between* class correlation coefficients were significant. This finding questions the notion that day care is a unitary concept, unchanging from class to class.

TABLE 3
CORRELATIONS BETWEEN CURRICULUM ATTITUDES OF DAY CARE
TEACHERS, MONTESSORI TEACHERS

	Day Care						Montessori			
	School A		School B		School C		School F		School G	
Teacher	1	2	3	4	5	6	7	8	9	10
2	.49 ^{a*}									
3	.59**	.43*								
4	.30	.53**	.30 ^a							
5	.52**	.25	.38	.44*						
6	.31	.22	.52**	.53**	.70 ^{a***}					
7										
8							.53 ^{a**}			
9							.76***	.48*		
10							.60**	.47*	.72 ^{a***}	

a within class correlation
* $p < .05$
** $p < .01$
*** $p < .001$

The correlations between the attitudes of the teachers in the two Montessori schools are also presented in Table 3. In this case, all between class correlations are significant thereby supporting the belief that a Montessori system exists—at least in terms of shared curriculum beliefs.

Finally, three schools representing different conceptual models were randomly chosen from the seven participating schools in which two teachers were present. The schools included a cooperative, a day care, and a Montessori centre. It seemed reasonable to expect considerable similarity among teachers working within a given theoretical framework, as indicated above. The question to have been answered in the following analysis was whether or not teachers employed in classrooms varying in conceptual background would be in basic agreement concerning their attitudes towards teaching preschoolers. Inter-teacher correlations are presented in Table 4. The data clearly indicate that day care teachers agree with cooperative personnel concerning how best to deal with preschool-age children. All four between teacher correlations are significant with the average between class correlations being .63. The day care group could not, however, agree consistently with Montessori teachers, and the correlations were thus low (Mean $r = .43$). Likewise, the average correlation between cooperative and Montessori teachers was only .46.

TABLE 4
CORRELATIONS BETWEEN CURRICULUM ATTITUDES OF TEACHERS IN A VARIETY OF SETTINGS

Teacher	Day Care		Cooperative		Montessori	
	T1	T2	T3	T4	T5	T6
1	1.00					
2	.30 ^a	1.00				
3	.57**	.61**	1.00			
4	.73***	.58**	.67 ^a	1.00		
5	.44*	.40	.21	.62**	1.00	
6	.32	.54**	.45*	.53**	.53 ^{a**}	

a within class correlation
* $p < .05$
** $p < .01$
*** $p < .001$

Teacher Practices Observation Form

As in the previous section, correlation coefficients were calculated between teachers' behaviours with each given classroom. The correlations are presented in Table 2. Briefly, all correlations were high, ranging from .60 to .84.

The data for the day care and Montessori groups were again analyzed to consider the relationship between teachers' behaviours within a given conceptual framework. The correlations between the behaviour of teachers employed in different day care centres are presented in Table 5. Based on the

TABLE 5
CORRELATIONS BETWEEN CURRICULUM BEHAVIOURS OF DAY CARE TEACHERS, MONTESSORI TEACHERS

	Day Care						Montessori			
	School A		School B		School C					
Teacher	1	2	3	4	5	6	7	8	9	10
2	.77 ^{a**}									
3	.52*	.39								
4	.70**	.50*	.58 ^{a*}							
5	.77**	.61*	.80**	.72**						
6	.92**	.79**	.62*	.65**	.84 ^{a**}					
7										
8							.74 ^{a**}			
9							.59*	.54**		
10							.62*	.51*	.79 ^{a**}	

a within class correlation
* $p < .01$
** $p < .001$

fact that 11 of the 12 possible between class correlation coefficients were significant, it is reasonable to conclude that teachers employed in various day care centres do behave similarly.

The correlations between teacher behaviours in the two Montessori classes are also shown in Table 5. As with the attitudinal data, all four between class correlations were significant thereby supporting the behavioural generality of the Montessori method.

Finally, the three schools representing different theoretical models were examined to discover the similarities of teacher behaviours from model to model. The correlations are presented in Table 6. The data indicate moderate behavioural similarities between teachers working in day care and cooperative preschool centres. Two of the four between teacher correlations were significant with the average between day care-cooperative correlation being a rather low .42. As with the attitudinal data, there was little similarity between the day care and Montessori teachers. The average correlation was but .36. Again, much like the attitudinal data, the cooperative teachers were more similar, behaviourally, to the Montessori teachers than were the day care teachers. Three of the four cooperative-Montessori correlations were significant with an average correlation of .46. It is worth noting that each of the *within* class correlations (i.e. correlations between teachers in day care, $r = .58$; cooperative centres, $r = .60$; and Montessori schools, $r = .74$) was higher than the average relevant between school correlations cited above.

TABLE 6
CORRELATIONS BETWEEN BEHAVIOURS OF TEACHERS IN A VARIETY OF SETTINGS

Teacher	Day Care		Cooperative		Montessori	
	T1	T2	T3	T4	T5	T6
1	1.00					
2	.58 ^{a**}	1.00				
3	.57**	.47*	1.00			
4	.36	.29	.60 ^{a**}	1.00		
5	.29	.27	.54**	.47*	1.00	
6	.36	.52**	.34	.50**	.74 ^{a***}	1.00

a within class correlation
* $p < .05$
** $p < .01$
*** $p < .001$

Discussion

One purpose of the present study was to assess whether or not teachers working in the same preschool setting, regardless of programme format, shared similar attitudes and behaviours. The results indicated that in five of the seven schools studied, the teachers could agree with each other about the most desirable educational strategies to use with preschoolers. These findings contradict earlier reports by Moffitt (1974) and Taylor (1975) who

indicated a lack of correspondence between teachers' curricular attitudes in the same setting. This general difference may be a function of the different teacher attitude scales used in the various studies. Moreover, the two classes in which teachers did not express similar attitudes in this study may have been much like those preschools studied by Moffitt and Taylor.

One encouraging finding was the consistent similarity of teacher behaviours within the same setting. According to Moffitt (1974) it is much more significant that teachers behave consistently than express consistent curriculum attitudes. Moffitt believes that teachers may not have the requisite verbal repertoires to express their attitudes clearly. Thus, how teachers think may be better assessed through their behaviours. A future study might do well to consider the relative effects of programmes which lack teacher consistency in attitudes and behaviours vs. those which lack consistency in either area vs. those which are consistent throughout on children's cognitive and social competence. It may be that programmes in which there are inconsistent teacher behaviours are not as effective in producing developmental change in children as those programmes in which teachers behave consistently toward the children.

A second purpose of the study was to discover whether or not teachers who worked in similar programmatic settings shared similar attitudes and behaviours. The importance of this goal relates to the issue of whether or not programmes which share the same name on paper actually look the same in the field. The attitudes of day care centre teachers employed in three different settings were not found to be generally similar. However, their behaviours were consistently similar — a finding which speaks to the issue of defining the existence of "programmes" or "curricula" behaviourally.

All attitudes and behaviours of teachers working in two Montessori schools were significantly intercorrelated. The more consistent verbal agreement regarding optimal teaching strategies among the Montessori as opposed to the day care teachers may be a function of the form of education received by the former group. Montessori teacher training institutes may tend to leave an indelible and non-malleable mark on the minds of their "disciples". The finding of consistent behaviours between teachers in Montessori schools contradicts the expressed belief that the "Montessori method" is but a myth and that few Montessori programmes are alike (Banta, 1972). However, both of the programmes under study were in the same small county and may have shared programmatic ideas between them. Further studies would do well to consider more than two schools of a single theme.

Finally, the results indicated moderate similarities between the expressed attitudes and behaviours of teachers employed in day care and cooperative nursery centres. These similarities may be the result of the play orientation of the schools, as well as the fact that neither centre derived its curriculum from any discernible theory. Day care and Montessori teachers had little in common concerning expressed attitudes and behaviours, thereby supporting the notion that the two represent rather radical differences in programmatic theme and purpose. The primary purpose of day care centres is the physical care of the child, whereas the primary purpose of Montessori schools is to develop children's cognitive skills. Moderate attitudinal and behavioural

similarities were also found between the cooperative and Montessori centres, thereby implying that the former model represents a mid-point in a care-to-educationally oriented curriculum.

In conclusion, it is important that future early childhood education research endeavours take into account the attitudes and behaviours of those persons employed in the centres under study. If a programme is found to be ineffective in producing gains of any sort in preschoolers, then it may be that the teachers within the programme are providing inconsistent behavioural models. Moreover, only through the formative analysis of teacher behaviours can practitioners be made aware of what it is that makes a "successful" programme successful. Canadian researchers would thus do well to avoid the summative, pre- to post-test designs of "model" programmes until further formative descriptions of those programmes are made available.

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¹ Full copies of the TBRS and the TPOF are available upon request from the author.

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